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'SUB #4' USERS GUIDE: COMPUTER CALCULATION OF LONGWALL SUBSIDENCE PROFILES USING THE NCB SUBSIDENCE ENGINEERS HANDBOOK

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by

D.A. Young* and T.R.C. Aston**

SUMMARY

This report describes the program 'SUB #4' which undertakes the computer calculation and plotting (using a dot matrix printer) of longwall subsidence profiles using the National Coal Board (United Kingdom) Subsidence Engineers Handbook. Both transverse and longitudinal subsidence profiles are calculated and plotted. The program is written in G-BASIC for a North Star microcomputer.

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GUIDE DES USAGERS "SUB #4": CALCUL DES PROFILS DE LA SUBSIDENCE DE L'EXPLOITATION PAR LONGUE TAILLE À L'AIDE DU MANUEL "SUBSIDENCE ENGINEERS HANDBOOK" PRÉPARÉ PAR LE NATIONAL COAL BOARD (NCB)

par

D.A. Young* et T.R.C. Aston**

RÉSUMÉ

Ce rapport donne une description du programme "SUB #4" qui fait le calcul et le traçage (à l'aide d'une imprimante matricielle par points) des profils de la subsidence de l'exploitation par longue taille à l'aide du manuel sur la subsidence préparé par le NCB (Royaume-Uni) à l'intention des ingénieurs soit le "Subsidence Engineers Handbook". On calcule et trace à la fois les profils transversal et longitudinal de la subsidence. Ce programme est écrit en langage G-BASIC pour un micro-ordinateur North Star.

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INTRODUCTION

The extraction of coal by longwall techniques, where the waste area is left to cave naturally, results in the formation of a subsidence trough or profile at the ground surface. The resulting subsidence trough can cause serious damage to overlying surface structures.

During the 1950's, the National Coal Board (NCB) in Great Britain undertook an extensive research program to understand and predict the magnitude and effects of subsidence profiles using empirical techniques. In 1965, the NCB Subsidence Engineers Handbook (SEH) (1) was first produced, which allowed the accurate prediction (±10%) of longwall subsidence profiles for a variety of different conditions.

It should be noted that the NCB SEH is often viewed as the definitive work on subsidence prediction in many countries of the world. However it is often difficult, especially when using empirical techniques, to quantify the effects of individual parameters such as geology or the presence of existing workings in adjacent seams on the eventual profile magnitude. Difficulties have therefore arisen when applying the SEH directly to the coalfields of other countries: the USA and Australia. However, the NCB SEH for all its limitations can give a good indication of the probable magnitude of subsidence profiles, providing that conditions within the coalfield to which it is applied are comparable to those found in U.K. coalfields.

PROGRAM 'SUB #4'

The program 'SUB #4' allows the computerised calculation of subsidence profile parameters using the NCB Subsidence Engineers Handbook (1). To use the program it is necessary to input the following data:

Colliery and seam names
District/panel identification number
Panel width (metres)
Seam thickness (metres)
Panel length (metres)
Panel depth - mean maingate and tailgate elevations (metres)

NOTE: All the input parameters must be input as metric units.

'SUB #4' was written for use on a North Star microcomputer using the North Star G-BASIC language (with associated editing and file handling software). The program is conveniently run using a 256 kB diskette and an EPSON FX100 Dot Matrix Printer. A simple graphics plotting package is included within the program to facilitate graphics capabilities using the EPSON FX100 printer. The user is expected to be familiar with the operation of microcomputers and the concept of subsidence profile calculation using the NCB SEH (1).

A documentation program 'SUBDOC' gives a description of 'SUB #4', while a source listing (including the data files) is given along with an example of the output format. A description of the various program segments is also included.

PROGRAM DESCRIPTION

A listing of the documentation program 'SUBDOC' is given in Appendix A, while a source listing of the program is given in Appendix B.

Line No	
10 - 140	Program header
150 - 170	Program description (call 'SUBDOC')
180 - 200	Program dimension statements
210 - 370	Service menu (program operation)
380 - 660	Input mining parameters and check for limitations
670 - 900	Data file information
910 - 1120	Calculates and prints headline information
1130 - 1230	Calculates transverse subsidence line
1240 - 1350	Calculates percentage subsidence
1360 - 1490	Calculates distance to panel centre for transverse subsidence line
1500 - 1560	Maximum strain calculation
1570 - 1700	Calculates maximum strains in profile

1710 - 1810	Calculates transverse strain profile
1820 - 1870	Calculates percentage strain
1880 - 1960	Calculates transverse distances for strain profile
1970 - 2030	Calculations for longitudinal subsidence value
2040 - 2130	Calculates longitudinal subsidence values
2140 - 2200	Calculates percentage longitudinal subsidence
2210 - 2270	Calculates longitudinal strain
2280 - 2370	Calculates longitudinal strain values
2380 - 2450	Calculates percentage longitudinal strain
2460 - 2500	Turn on underline mode to printer
2510 - 2750	Finds maximum subsidence factor in DATA 1
2760 - 2890	Finds data line address to match all w/h and depths in data table searches
2900 - 2980	Calculates percentage of maximum subsidence and strain throughout program
2990 - 3060	Searches for depths between 10 and 50 for maximum subsidence factor
3070 - 3960	Creates data files for and undertakes graphics

PROGRAM USE

'SUB #4' uses a service menu to direct the operation of the program (lines 210 - 370 in Appendix B) with the following options:

Hardcopy of results
Graphics
Another calculation
End session

A listing of the output files is given in Tables 1 and 2, while the output graphics are shown in Figures 1 to 4. The data files, which

consists of digitised values obtained from graphs in the NCB SEH, are given in Appendices C to I:

Appendix C - DATA 1 - Maximum subsidence factors (s/m).
Appendix D - DATA 2 - Transverse subsidence profile, relationship between w/h and d/h for various points on the profile.
Appendix E - DATA 3 - Maximum tensile and compressive strain factors for various w/h ratios.
Appendix F - DATA 4 - Transverse strain profile, relationship between w/h and d/h for various points on the profile.
Appendix G - DATA 5 - Longitudinal subsidence profile distance factors.
Appendix H - DATA 6 - Longitudinal strain profile distance factors.
Appendix I - DATA 7 - Correction factors for the effect of seam gradient on tensile strain.

If the elevation of the main and tailgates indicates a gradient greater than 1 in 10, then the maximum tensile strain is corrected for seam gradient (DATA 7 - Appendix I). However, it should be noted that although a correction is made and printed the new value is not substituted into the transverse/longitudinal profile calculations.

ACKNOWLEDGEMENT

The authors would like to acknowledge the assistance provided by Mr. G. Corbett in preparing the graphics routines.

REFERENCES

1. National Coal Board (U.K.); Subsidence Engineers Handbook; Mining Department; London 1975.

AREA CBDC COLLIERY LINGAN SEAM HARBOUR DISTRICT/PANEL 9 EAST

PANEL WIDTH (w) 200.0 SEAM THICKNESS (m) 2.0 PANEL LENGTH (l) 1400.00

PANEL DEPTH (m) (h) 530.00 w/h ratio = .38 S/m= .31

∴ S = .62

Subsidense as s/S	0	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95	1.00
Subsidense in meters	.00	.03	.06	.12	.19	.25	.31	.37	.43	.50	.56	.59	.62
Distance in meters from panel centre	471.70	318.00	254.40	185.50	153.70	127.20	111.30	95.40	79.50	63.60	42.40	31.80	.00
Distance in terms of h from panel centre	.89	.60	.48	.35	.29	.24	.21	.18	.15	.12	.08	.06	.00

TRAVELLING SUBSIDENSE PROFILE

Perpendicular to face centre e	79.500	21.200	-31.800	-66.250	-95.400	-121.900	-151.050	-180.200	-222.600	-278.250	-339.200
	.150	.040	-.060	-.125	-.180	-.230	-.285	-.340	-.420	-.525	-.640
Subsidense in Meters	.03	.06	.12	.19	.25	.31	.37	.43	.50	.56	.59
	.65	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95

Table 1 - Output files - subsidence profile data

MAXIMUM STRAIN FACTORS

+E = .80 S/h where S/h = 1.17 mm -E = 1.80 S/h

= .94 mm/m = 2.11 mm/m

TRAVERSE STRAIN PROFILE

	EXTENSION +E												COMPRESSION -E						
e/E	.00	.20	.40	.60	.80	1.00	.80	.00	.20	.40	.60	.80	1.00	.80	.60	.40	.20	.00
	.00	.19	.37	.56	.75	.94	.75	.00	.42	.84	1.26	1.68	2.11	1.68	1.26	.84	.42	.00
h =	471.70	323.30	280.90	238.50	217.30	169.60	148.40	116.60	95.40	79.50	58.30	37.10	.00	.00	.00	.00	.00	.00
M	.89	.61	.53	.45	.41	.32	.28	.22	.18	.15	.11	.07	.00	.00	.00	.00	.00	.00

TRAVELLING STRAIN PROFILE (mm/M)

Perpendicular to	209.35	132.50	103.35	79.50	53.00	15.90	-10.60	.00	-79.50	-95.40	-111.30	-132.50	-190.80	-243.80	-280.90	NA	NA	NA
To face centre m	.395	.250	.195	.150	.100	.030	-.020	.000	-.150	-.180	-.210	-.250	-.360	-.460	-.530			

e/E	.00	.20	.40	.60	.80	1.00	.80	.00	.20	.40	.60	.80	1.00	.80	.60	.40	.20	.00
	.00	.19	.37	.56	.75	.94	.75	.00	.42	.84	1.26	1.68	2.11	1.68	1.26	.84	.42	.00

Table 2 - Output files - strain profile data

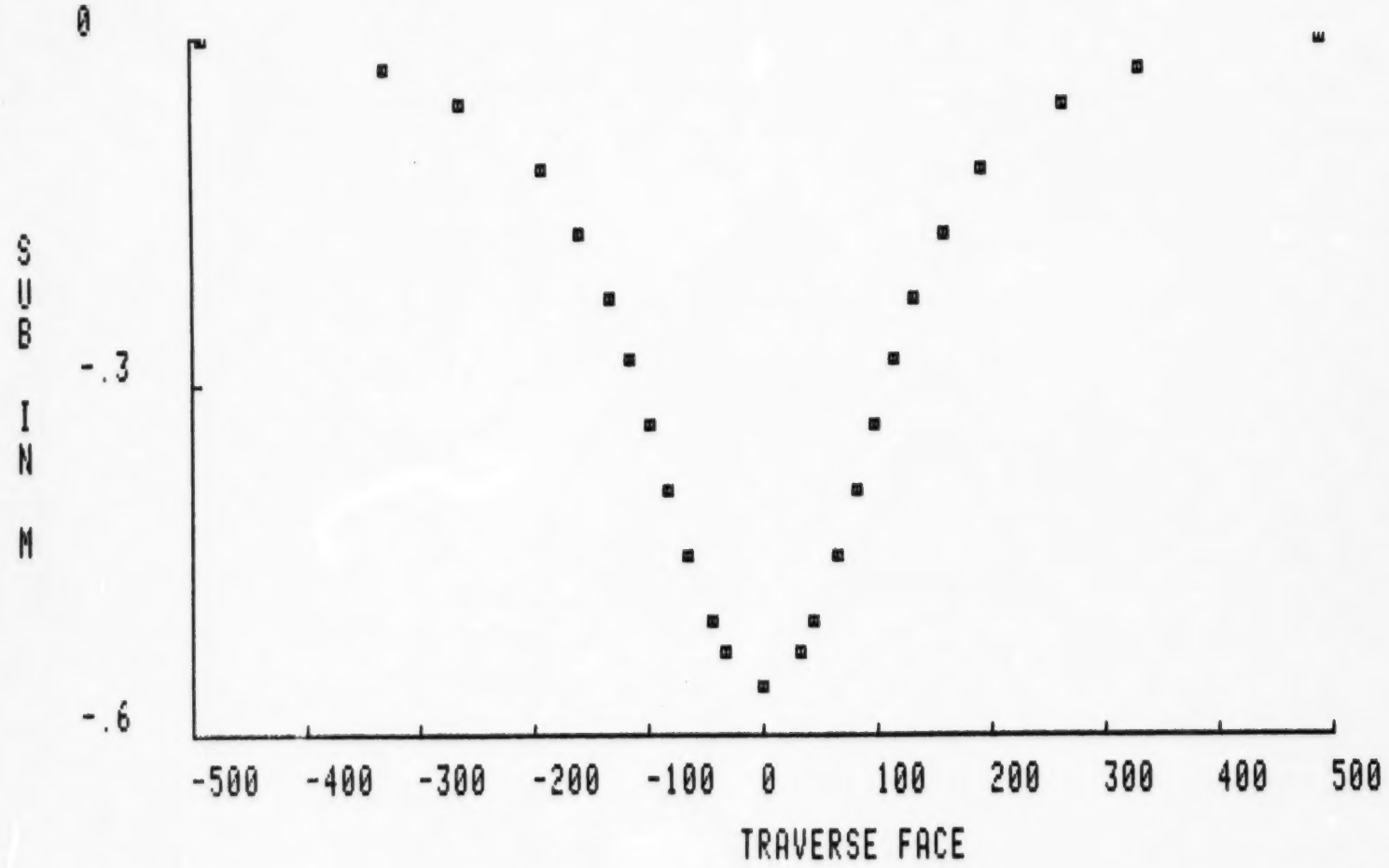

Figure 1 - Transverse subsidence profile

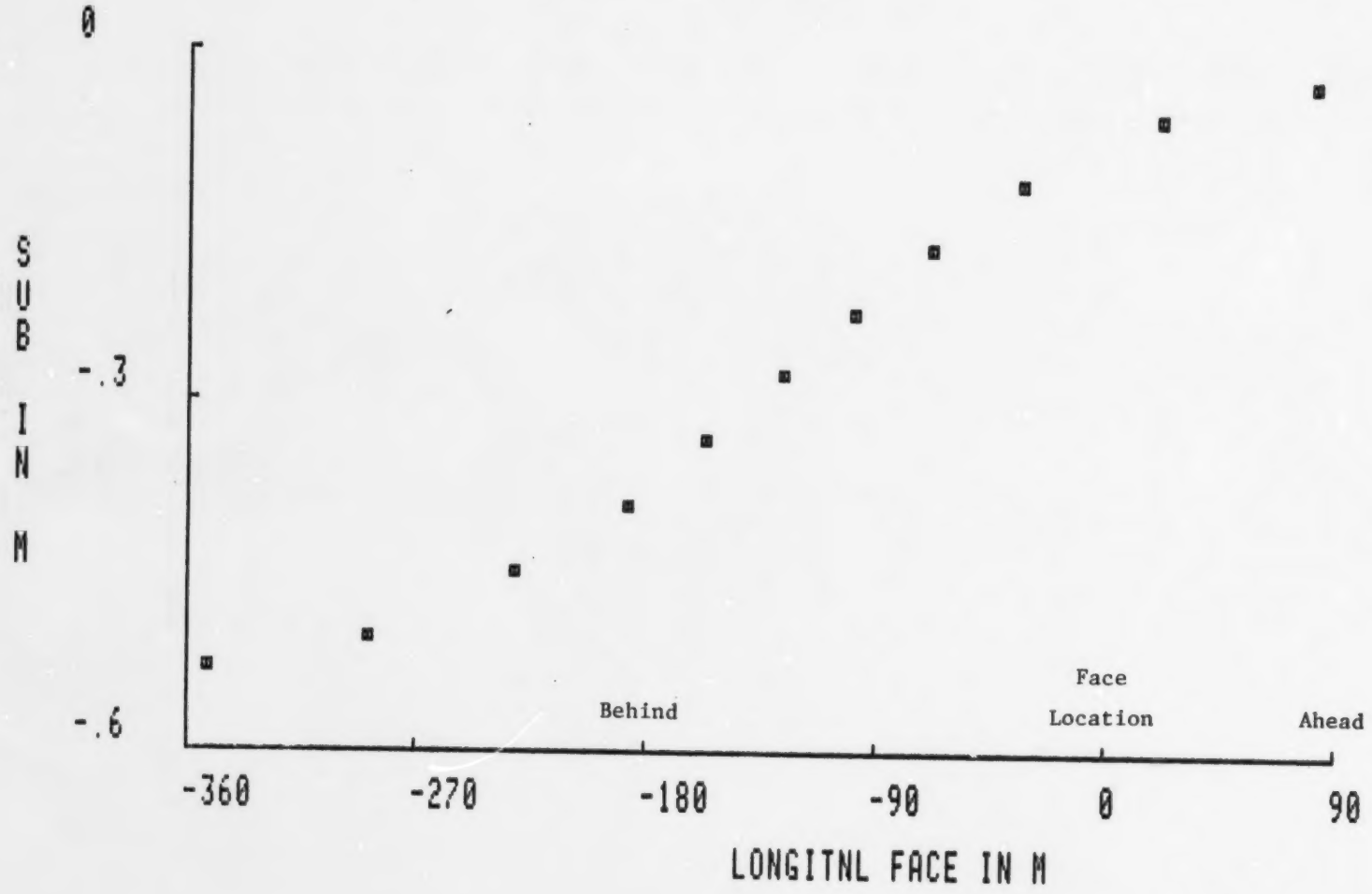

Figure 2 - Longitudinal (or travelling) subsidence profile

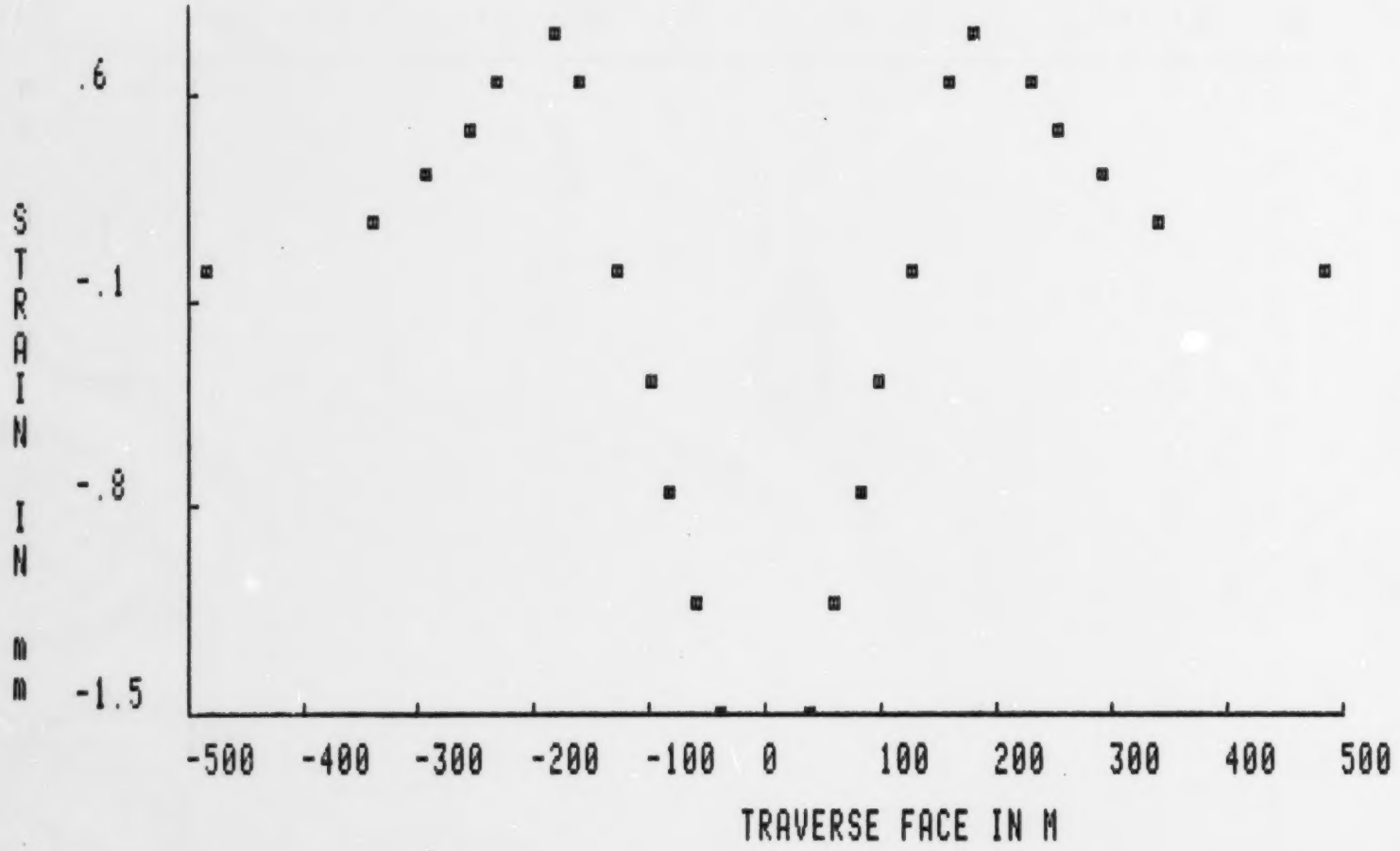

Figure 3 - Transverse strain profile

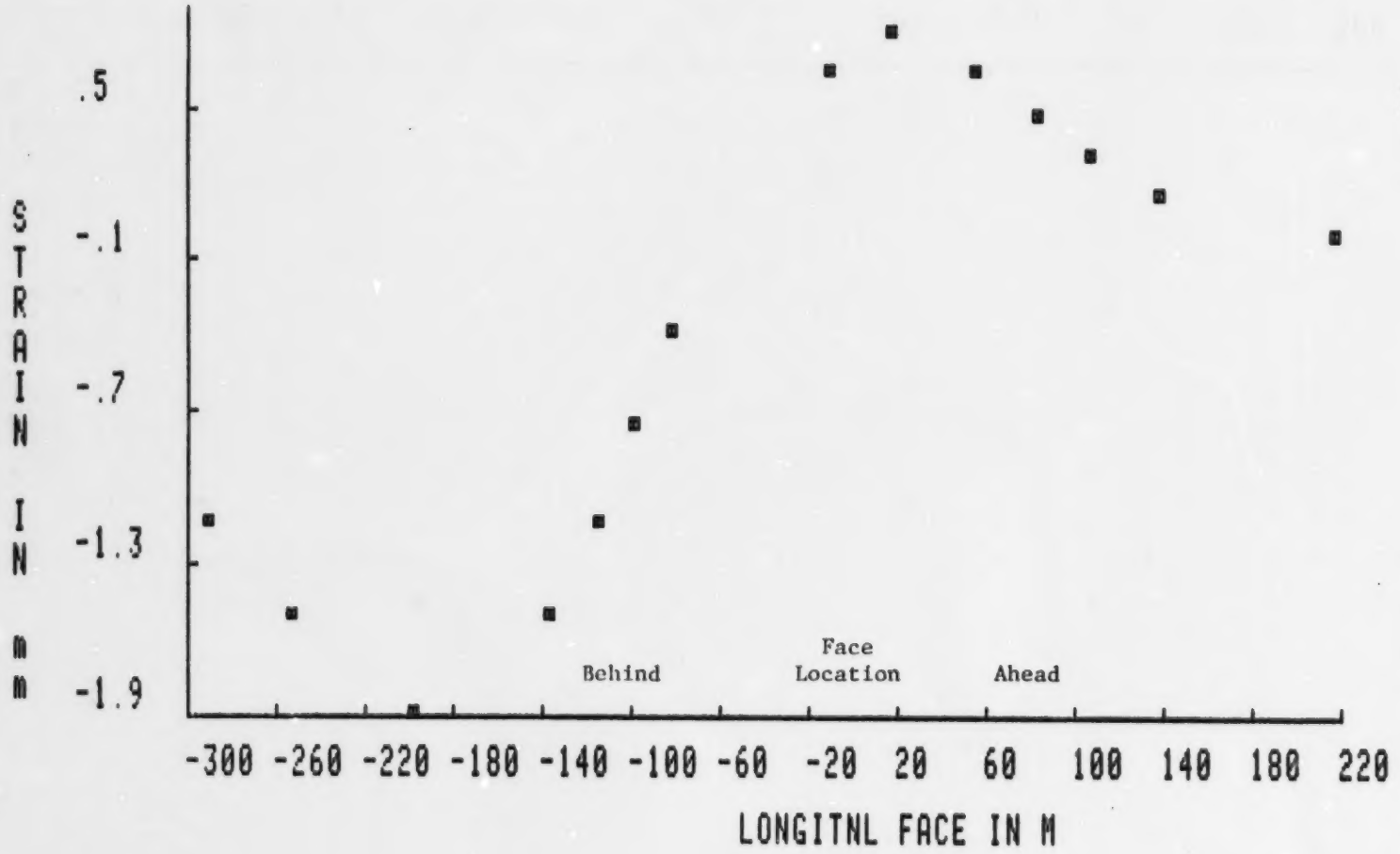

Figure 4 - Longitudinal (or travelling) strain profile

APPENDIX A

```
10 !CHR$(4)\GOSUB 940
20 REM
30 !"                    Program Function"
40 !"                    ----------------"
50 !"          Program SUB#4 main purpose is to provide quick calculation"
60 !" of empirical subsidense parameters regarding troughing in the Sydney"
70 !"Coal Field Basin.The information used to reach these results is con- "
80 !"tained in 7 data files in which 5 have been copied from a British    "
90 !"Engineers Subsidense Handbook.These values have been extrapolated to "
100 !"depths of 750 meters.(1) Aston T.R .(Description below)"
110 !" FILE NAME                    Description "
120 !
130 !"  DATA1          This file contains max subsidense factors derived from"
140 !"                 a contour diagram relating width to height ratios in "
150 !"                 E S Handbook.The file is 40 by 89 GRID"
160 !"                 of data numbers.The file cotains factors for width and "
170 !"                 height values ranging from (10-400 M at 10 M intravals)"
180 !"                 and (10-50 M at 5 M and 50-850 M at 10 M intravals)    "
190 !"                 respectively."
200 !"                 Max subsidense values range from .02 to .92 . "
210 !"                 Intermediate values are brought to the nearest point"
220 !
230 GOSUB 940
240 !
250 !"  DATA2                  This file was copied from the E S Handbook.IT "
260 !"                 contains W/H factors used in calculating the traverse "
270 !"                 distance from the panel centre for 5,10,20 30 ... to  "
280 !"                 100 % subsidense.It contains W/H ranging from .2 to 14 "
290 !"                 The file is a 108 by 14 (ROWS &COLUMNS)."
300 !
310 !"  DATA3           As above this file contains W/H relating max tensile "
320 !"                 and max compressive strain values in both the traverse"
330 !"                  and longitudinal calculations.It contains W/H ranging "
340 !"                  from .2 to 14.The file is 108 by 3 (R&C)."
350 !
360 !"  DATA4          As above except this file cotains W/H relating traverse"
370 !"                 distance fr panel centre and % tensile through % "
380 !"                 compressive strain.It contains W/H ratios from.2 TO 14."
390 !"                 The file is a 108 by 19 (R&C)."
400 !
410 GOSUB 940
420 !
430 !"  DATA5          As above this file contains depth values relating     "
440 !"                 distance perpendicular to and across the face centre  "
450 !"                 againt 5,10,20... to 100% longitudinal subsidense."
460 !"                 The depth no. range from 10 to 750 Meters.The file is "
470 !"                 A 114 by 12 (R&C)."
480 !
490 !"  DATA6          As above this file contain depth value relating distanc"
500 !"                 -e perpendicular to and across face centre against ten-"
```

```
510 !"                sile and compressive strain.This file contains depths  "
520 !"                ranging from 10 to 750 Meters."
530 !"                The file is 114 by 16 (R&C)."
540 !
550 !" DATA7           This file contains gradient values used in making "
560 !"                corrections in max tensile strain calculations.   "
570 !"                The file contains gradient values ranging fr 0 to 10"
580 !"                The file is 18 by 3 (R&C)."
590 !
600 GOSUB 940
610 !"Input Parameters - The user is required to supply the following infor-"
620 !"mation: Name of colliery,seam,and district,panel width,extracted seam "
630 !"height,panel length,depth of coverage and depths at the top and bottom "
640 !"of the panel."
650 !
660 !"                              PROGRAM OPERATION"
670 !"                              ----------------"
680 !"     The program begins operation by attaining and calculating the max "
690 !"subsidense value (DATA1)."
700 !"       Secondly it calculates the traverse distance to the panel centre"
710 !"for 0,5,10,20,30,40,50,60,70,80,90,95,100 % of max subsidense occurence."
720 !"       Next the program calculates the max strain values (tensile &"
730 !"compressive) using factors cooresponding to w/h values in (DATA3)."
740 !"(Note- If the gradient value between levels is of sufficient "
750 !"magnitude a coorection factor is applied to the max tensile value."
760 !"In normal Devco longwall mines this on the most part is negligible"
770 !"From this information values for 0 to 100 to 0 percent max strain "
780 !"and 0 to 100 to 0 percent max compressive strain by intravals of 20%"
790 !"are calculated for traverse distances to the face centre . The "
800 !"distances are calculated using factors cooresponding to the w/h "
810 !"value in (DATA4).Each distance matches a strain value as stated "
820 !"above to the face centre."
830 GOSUB 940
840 !"       The next two sections calculate % subsidense and strain values"
850 !"for distances perpendicular to the face centre respectively.Both "
860 !"sets of calculations are carried using the same methods for traverse "
870 !"calculations."
880 !"        All values calculated are provided in an explanatory hard-"
890 !"copy ."
900 GOSUB 940
910 !CHR$(4)\!"This is the end of SUB84 information ... ",
920 GOTO 970
930 END
940 !"HIT RETURN TO CONTINUE OR E TO ESCAPE ... "\Z$=INCHAR$(0)
950 IF Z$="E" THEN 970
960 GOTO 980
970 !"Returning to SUB84 program mode "\FOR I=1 TO 2000\NEXT\CHAIN "SUB84"
980 !CHR$(4)
990 RETURN
```

APPENDIX B

```
10 REM ************************************************************************
20 REM
30 REM                        PROGRAM SUB84
40 REM                        -------------
50 REM          Written by\  David Young
60 REM                        EG-ESS-03 (Technologist)
70 REM                        Department of Energy Mines & Resources
80 REM                        Canmet\CRL Cape Breton
90 REM                        210 George St.
100 REM                       Sydney ,N.S.
110 REM                       Canada B1P-1J3
120 REM
130 REM ************************************************************************
140 REM
150 !CHR$(4),"DO YOU WISH TO VIEW PROGRAM DESCRIPTION (Y OR N ) ",\INPUT Z$
160 IF Z$="Y" THEN 170 ELSE 180
170 CHAIN "SUBDOC"
180  DIM A$(20),B$(20),C$(20),D$(20),A(14),B(19),C(10),D(20),E(20)
190  DIM H(50),H1(50),H2(50),H3(50),H4(50),H5(50),H6(50),H7(50)
200 GOTO 380
210 REM ******************** SERVICE MENUE ********************
220 REM ** DIRECTS PROGRAM OPERATION
230 REM
240 !CHR$(4)
250 !"                          ** SERVICE MENU **"
260 !
270 !"                     (1) HARDCOPY OF RESULTS"
280 !"                     (2) GRAPHICS "
290 !"                     (3) ANOTHER CALCULATION"
300 !"                     (4) END SESSION"
310 !"                     ------------------------"
320 !"                                  ",\INPUT L
330 L=INT(L)\IF L=1 THEN GOSUB 920
340          IF L=2 THEN GOTO 3070
350          IF L=3  THEN CHAIN "SUB84"
360          IF L=4 THEN END
370 IF L<1 OR L>4 THEN 240
380 REM ********** INPUT PARAMETERS FOR SUBSIDENSE CALCULATION
390 REM ********** CHECKS FOR PARAMETER LIMITATIONS (SUBDOC84)
400 REM
410 REM
420 !CHR$(4)
430 A$="CBDC"
440 INPUT" COLLIERY    ",B$
450 INPUT" SEAM        ",C$
460 INPUT" DISTRICT/PANEL ",D$
470 !CHR$(4)
480 !"INPUT PANEL WIDTH ,SEAM THICKNESS ,PANEL LENGTH ,DEPTH (METERS)"
490 INPUT1"          ",A\INPUT1"         ",B\INPUT1"            ",C
500 INPUT1 "          ",D\!
```

```
510 IF A<10 OR A>400 THEN 530
520 IF A/D >14 THEN 550\IF A/D <.20 THEN 550\GOTO 580
530 !"OUT OF BOUNDS WIDTH VALUE >>> ."
540 FOR I= 1 TO 1800\NEXT\GOTO 470
550 !CHR$(4)
560 !"OUT OF BOUNDS WIDTH TO HEIGHT RATIO>> "\FOR I= 1 TO 1800\NEXT
570 GOTO 470
580 !CHR$(4)
590 INPUT"INPUT LOWER SEAM ELEVATION ",P
600 INPUT"INPUT UPPER SEAM ELEVATION ",P1
610 IF P1>P THEN 580
620 !CHR$(4),"HAVE A SIP OF COFFEE ...."
630 GOSUB 2520\REM ** GOSUB TO SEARCH FOR MAX SUB FACTOR
640 G=B*S \REM ** CALCULATES MAX SUBSIDENSE
650 K=G/D*1000 \REM ** CALCULATES SUBSIDENSE mm/M
660 E=A/D \REM ** CALCULATES W/H FACTOR FOR DATA FILES SEARCH
670 REM
680 REM ****** THIS SECTION HOLDS INFORMATION FOR DATA FILES
690 REM ** AND RETRIEVES THE REQUIRED DATA LINES FROM THE FILES .
700 REM ** DATA2 TO DATA4 FILES FIRST COLUMN CONTAIN W/H VALUES.
710 REM ** DATA5 AND DATA6 COLUMN 1 CONTAIN DEPTH VALUES FOR SEARCH.
720 REM ** DATA7 COLUMN 1 CONTAINS GRADIENT VALUES FOR SEARCH.
730 REM ** N= NO. OF COLUMNS IN FILE. E IS SEARCH ITEM.
740 REM ** SUBSCRIPTS A(1) TO F(1) REPRESENTS THE THE NUMBER NEAREST THE -E-
750 REM ** ARGUEMENT FOR COL1 SEARCH IN EACH FILE.THE ADJACENT NO.'S IN THE
760 REM ** ROW ARE STORED IN THE REMAINING A TO F ARRAYS.
770 REM
780 N=14\H$="DATA2"\GOSUB 2800
790 READ#1ZT,A(1)\FOR N=2 TO 14 \READ #1,A(N)\NEXT\CLOSE#1\CLOSE#2
800 N=3\H$="DATA3"\GOSUB 2800
810 READ#1ZT,C(1),C(2),C(3)\CLOSE#1\CLOSE#2
820 N=19\H$="DATA4"\GOSUB 2800
830 READ#1ZT,B(1)\FOR N=2 TO N\READ #1,B(N)\NEXT\CLOSE#1\CLOSE#2
840 E=D\N=12\H$="DATA5"\GOSUB 2800
850 READ#1ZT,D(1)\FOR N=2 TO 12\REA#01,D(N)\NEXT\CLOSE#1\CLOSE#2
860 E=D\N=16\H$="DATA6"\GOSUB 2800
870 READ#1ZT,E(1)\FOR N=2 TO 16\REA#01,E(N)\NEXT\CLOSE#1\CLOSE#2
880 E=(P-P1)/A\N=3\H$="DATA7"\GOSUB 2800
890 READ #1ZT,F(1),F(2),F(3)\CLOSE #1\CLOSE #2
900 GOTO 240
910 REM ------------------------------------------------------------
920 REM ** THIS SECTION CALCULATES AND PRINTS THE HEADLINE INFO FOR HDCY.
930 REM
940 E=A/D \REM ** SETS ORIGINAL W/H FOR HARCOPY.
950 LINE #1,165
960 REM ** SETS PRINT SIZE FOR HARDCOPY.
970 !#1 CHR$(27),CHR$(140),CHR$(15)
980 REM **  2170 AND 2180 TURN ON AND OFF UNDERLINE MODE TO PRINTER.
990 !#1
1000 GOSUB 2490\!#1 TAB(1),"AREA " ,\GOSUB 2500\!#1 A$,
```

```
1010 GOSUB 2490\!01 TAB(40),"COLLIERY ",\GOSUB 2500\!01 B$,
1020 GOSUB 2490\!01 TAB(80),"SEAM ",\GOSUB 2500\!01 C$,
1030 GOSUB 2490\!01 TAB(120),"DISTRICT/PANEL ",\GOSUB 2500\!01 D$
1040 !01
1050 GOSUB 2490\!01 TAB(1),"PANEL WIDTH",\GOSUB 2500\!01" (w) ",Z5F1,A,
1060 GOSUB 2490\!01 TAB(60),"SEAM THICKNESS",\GOSUB 2500\!01" (m) ",Z4F1,B,
1070 GOSUB 2490\!01 TAB(110),"PANEL LENGTH",\GOSUB 2500\!01 " (l) ",Z7F2,C
1080 !01
1090 GOSUB 2490\!01 TAB(1),"PANEL DEPTH",\GOSUB 2500\!01" (m) (h) ",Z6F2,D,
1100 !01 TAB(60),"w/h ratio =",Z7F2,E,TAB(96),"S/m=",Z7F2,S
1110 !01
1120 !01 TAB(96),".:. S =",Z5F2,G
1130 REM
1140 REM ** CALCULATION AND HARDCOPY  FOR TRAVERSE SUBSIDENSE *****
1150 REM
1160 REM
1170 GOSUB 2490\!01TAB(1),".",TAB(147),"."
1180 !01
1190 !01 TAB(1),"!"," Subsidense as s/S",TAB(25),"!    ",
1200!01 Z8I,0,Z8F2,0.05,0.10,0.20,0.30,0.40,0.50,0.60,0.70,0.80,0.90,0.95,1.00,
1210 !01 TAB(147),"!"
1220 !01
1230 !01 TAB(1),"!"," Subsidense in meters",TAB(25),"!    ",
1240 REM ** THIS CALCULATES I TRAVERSE SUBSIDENSE AND PRINTS IT TO HARDCOPY.
1250 RESTORE 2800
1260       FOR I=1 TO 13
1270 READ R\61=G*R
1280 !01Z8F2,61,
1290       NEXT
1300 !01TAB(147),"!"
1310 !01
1320 GOSUB 2500
1330 !01 TAB(1),"!", "Distance in meters",TAB(26),"!   ",TAB(147),"!"
1340 GOSUB 2490
1350 !01 TAB(1),"!"," from panel centre",TAB(26),"!   ",
1360 REM ** THIS CALCULATES DISTANCES TO PANEL CENTRE FOR TRAVERSE SUBSIDENSE
1370 REM ** AND PRINTS IT TO HARDCOPY.
1380          FOR N=2 TO 14
1390      !01Z8F2,A(N)*D,
1400           NEXT
1410 !01TAB(147),"!"
1420 GOSUB 2500
1430 !01TAB(1),"!","Distance in terms of",  TAB(26),"!",TAB(147),"!"
1440 GOSUB 2490
1450 !01TAB(1),"!","h from panel centre",TAB(26),"!   ",
1460          FOR N=2 TO 14
1470   !01Z8F2,A(N),
1480          NEXT
1490 !01TAB(147),"!"
1500 REM
```

```
1510 REM ** HARDCOPY AND MAXIMUM STRAIN VALUE CALCULATION
1520 REM
1530 REM
1540 !@1\!@1\GOSUB 2500
1550 !@1"MAXIMUM STRAIN FACTORS"
1560 !@1
1570 REM ** CALCULATES MAX STRAIN VALUES AND PRINTS IT TO HARDCOPY.
1580 REM
1590 !@1 TAB(10),"+E =",Z5F2,C(2)," S/h ",TAB(40),"where S/h =",Z6F2,K,
1600 !@1" mm",TAB(90),"-E =",Z5F2,C(3)," S/h"
1610 !@1
1620 !@1 TAB(10),"   =",Z6F2,C(2)*K," mm/m",TAB(90),"   =",Z6F2,C(3)*K," mm/m"
1630 IF F(1)=0 THEN 1680 \REM ** CHECKS FOR INCLINE SEAM CORRECTION
1640 !@1
1650 !@1   "TESILE-INCLINE SEAM CORRECTION    ","LOWER= ",Z5F2,C(2)*F(3)," mm",
1660 !@1 "                          ","UPPER= ",Z5F2,C(2)*F(2)," mm",
1670 !@1 "                GRADIENT= ",F(1)
1680 REM
1690 REM
1700 !@1
1710 REM ** CALCULATES AND PRINTS TRAVERSE STRAIN PROFILE.
1720 REM
1730 !@1 "TRAVERSE STRAIN PROFILE"
1740 !@1
1750 !@1TAB(35),"EXTENSION +E",TAB(100),"COMPRESSION -E"
1760 GOSUB 2490 \!@1 TAB(1),".",TAB(159),".\!@1\!@1 TAB(1),"!  e/E",
1770 !@1 TAB(10),"!",
1780  RESTORE 2950
1790      FOR N=1 TO 18
1800 READ R\!@1 Z8F2,R,
1810       NEXT
1820 REM ** CALCULATES % STRAIN AND PRINTS IT TO HARCOPY
1830 REM
1840 !@1 TAB(160),"!"\GOSUB 2500\!@1 TAB(1),"!",TAB(160),"!"\GOSUB 2490
1850 !@1 TAB(1),"!",TAB(10),"!",\RESTORE 2950
1860      FOR N=1 TO  8\READ R \!@1 Z8F2,R*K*C(2),\NEXT
1870      FOR N=9 TO 18\READ R \!@1 Z8F2,R*K*C(3),\NEXT\!@1 TAB(160),"!"
1880 REM
1890 REM ** THIS CALCULATES THE TRAVERSE DISTANCES FOR THE STRAIN VALUES
1900 REM ** AND PRINTS THEM TO HARDCOPY.
1910 REM
1920 GOSUB 2500\!@1 TAB(1),"!",TAB(160),"!"\GOSUB 2490\!@1 TAB(1),"! h =",
1930 !@1 TAB(10),"!",\FOR N=2 TO 19\!@1 Z8F2,B(N)*B,\NEXT\!@1 TAB(160),"!"
1940 GOSUB 2500\!@1 TAB(1),"!",TAB(160),"!"\GOSUB 2490
1950 !@1 TAB(1),"!   N ",TAB(10),"!",\FOR N=2 TO 19\!@1 Z8F2,B(N),\NEXT
1960 !@1 TAB(160),"!"\!@1
1970 REM
1980 REM ** HEADLINES AND CALCULATIONS FOR TRAVELLING SUBSIDENSE
1990 REM
2000 REM
```

```
2010 !#1"TRAVELLING SUBSIDENSE PROFILE"
2020 GOSUB 2490 \!#1 TAB(1),".",TAB(160),"."
2030 !#1\!#1TAB(1),"Perpendicular to     !",
2040 REM
2050 REM ** CALCULATES PERPENDICULAR TO FACE CENTRE DISTANCES FOR LONGITUD-
2060 REM ** INAL SUBSIDENSE VALUES AND PRINTS IT TO HARDCOPY.
2070 REM
2080  FOR N=2 TO 12\!#1I11F3,D(N)*D,\NEXT
2090  !#1TAB(160),"!"
2100     !#1TAB(1),"  face centre m     !",
2110 FOR N=2 TO 12\!#1 I11F3,D(N),\NEXT\!#1 TAB(160),"!"
2120 !#1
2130 !#1TAB(1),"Subsidense in Meters !",
2140 REM
2150 REM ** CALCULATES I LONGITUDINAL SUBSIDENSE AND PRINTS IT TO HARDCOPY.
2160 REM
2170  RESTORE 2960\FOR N=1 TO 11\READ R\!#1I11F2,R*6,\NEXT
2180 !#1TAB(160),"!"
2190 !#1TAB(1),"!",TAB(22),"!",
2200 RESTORE 2960\FOR N=1 TO 11\READ R\      !#1I11F2,R,\NEXT\!#1TAB(160),"!"
2210 REM
2220 REM ** HEADLINES AND CALCULATION OF TRAVELLING STRAIN.
2230 REM
2240 REM
2250 !#1\!#1\!#1 "TRAVELLING STRAIN PROFILE (mm/M)"
2260 !#1 TAB(1),".",TAB(160),"."
2270 !#1\!#1 TAB(1),"! Perpendicular to !",
2280 REM
2290 REM ** CALCULATES PERPENDICULAR TO FACE CENTRE DISTANCES FOR LONGITUDINAL
2300 REM ** STRAIN VALUES AND PRINTS IT TO HARDCOPY.
2310 REM
2320 FOR N=2 TO 16\L=D*E(N)\!#1I8F2,L,\NEXT
2330 !#1 "    MA      MA      MA",\!#1 "!"
2340  !#1TAB(1),"! To face centre m !",
2350 FOR N=2 TO 16\!#1I8F3,E(N),\NEXT\!#1TAB(160),""
2360 !#1\RESTORE 2950\!#1TAB(1),"! e/E",TAB(20),"!",
2370 FOR N=1 TO 18\READ R\!#1I8F2,R,\NEXT\!#1""
2380 REM
2390 REM ** CALCULATES I LONGITUDINAL STRAIN VALUES AND PRINTS IT TO HARDCOPY.
2400 REM
2410     RESTORE 2950\!#1 TAB(1),"!",TAB(20),"!",
2420     FOR N=2 TO 8\READ R\L=C(2)*R*K\!#1I8F2,L,\NEXT
2430     FOR N=9 TO 19\READ R\L=C(3)*R*K\!#1I8F2,L,\NEXT\!#1TAB(160),""
2440 GOTO 240
2450 END
2460 REM
2470 REM ** THIS SECTION TURNS ON UNDERLINE MODE TO THE PRINTER **
2480 REM
2490!#1  CHR$(27),"-",CHR$(1),\RETURN
2500!#1  CHR$(27),"-",CHR$(0),\RETURN
```

```
2510 REM
2520 REM ** THIS SECTION FINDS MAX SUBSIDENSE FACTOR IN DATA1 *****"
2530 REM
2540 K=D/10\K1=INT(K)\IF K-K1>=.5 THEN 2550 ELSE 2560
2550 K1=K1+1
2560 K1=K1*10
2570 IF D<50 THEN GOSUB 3020
2580 IF D>=50 THEN 2590 ELSE 2640
2590    FOR I= 50 TO 850 STEP 10
2600 LET X=X+1
2610   IF K1<=I THEN EXIT 2630
2620    NEXT
2630 X=X+8
2640 K=A/10\K1=INT(K)\IF K-K1>=.5 THEN 2650 ELSE 2660
2650 K1=K1+1
2660 K1=K1*10
2670       FOR J=1 TO 40
2680 X1=J*10
2690 IF K1<=X1 THEN EXIT 2710
2700       NEXT
2710 OPEN #1,"DATA1"
2720 T=(J-1)*445+(X-1)*5
2730 READ #1%T,S
2740 CLOSE #1
2750 RETURN
2760 REM
2770 REM ** THIS SECTION FINDS THE ADDRESS FOR THE DATA LINE WHICH
2780 REM ***  MATCHES THE w/h AND DEPTHS FOR ALL DATA TABLE SEARCHES.
2790 REM
2800 T=0\X=0
2810 OPEN #1,H$
2820 OPEN #2,H$
2830 READ #1%T,Z\X=X+1
2840 IF Z>= E THEN 2860 ELSE 2850
2850 READ #2%T,Z1\T=T+(M*5)\GOTO 2830
2860 P=(E-Z1)/(Z-Z1)
2870 IF P>=.5 THEN 2880 ELSE 2890
2880 T=(X-1)*(M*5)\RETURN
2890 T=(X-2)*(M*5)\RETURN
2900 REM
2910 REM ** THE FOLLOWING DATA LINES CALCULATE PERCENTAGES OF MAX
2920 REM ** SUBSIDENSE AND MAX STRAIN THROUGH OUT THE PROGRAM.
2930 REM
2940 DATA 0.0,.05,.10,.20,.30,.40,.50,.60,.70,.80,.90,.95,1.00
2950 DATA 0,.2,.4,.6,.8,1,.8,0,.2,.4,.6,.8,1,.8,.6,.4,.2,0
2960 DATA .05,.10,.20,.30,.40,.50,.60,.70,.80,.90,.95
2970 REM
2980 RETURN
2990 REM
3000 REM ** SEARCHES FOR DEPTHS BETWEEN 10 AND 50 FOR MAX SUBSIDENSE FACTOR.
```

```
3010 REM
3020    FOR I=15 TO 50 STEP 5
3030  LET X=X+1
3040   IF I>K1 THEN EXIT 3060
3050    NEXT
3060  RETURN
3070 REM ---------- CREATES DATA FILES FOR GRAPHICS -------
3080 REM ** THE FOLLOWING SECTION CALCULATES AND STORES IN 4 FILES INFORMATION
3090 REM **.FOR 4 GRAPHICAL PLOTS.THE PLOTS ARE Z SUBSIDENSE VS DISTANCE FOR
3100 REM ** TRAVERSE & LONGITUDINAL PROFILES.Z STRAIN VS DISTANCES FOR
3110 REM ** TRAVERSE AND LONGITUDINAL STRAIN PROFILES.
3120 RESTORE 2940
3130 J=25
3140      FOR N=1 TO 13
3150 READ R\ H(N)=-G*R\H(J)=H(N)\J=J-1
3160      NEXT
3170 J=25
3180    FOR N=2 TO 14
3190    H1(N-1)=D*A(N)\H1(J)=-H1(N-1)\J=J-1
3200    NEXT
3210  J=35\RESTORE 2950
3220    FOR N=1 TO 8
3230 READ R
3240 H2(N)=C(2)*K*R\H2(J)=H2(N)\J=J-1
3250    NEXT
3260    FOR N=9 TO 18
3270 READ R
3280 H2(N)=-C(3)*K*R\H2(J)=H2(N)\J=J-1
3290    NEXT
3300 J=35
3310    FOR N=2 TO 19
3320 H3(N-1)=-B(N)*D\H3(J)=B(N)*D \J=J-1
3330     NEXT
3340 RESTORE 2960
3350     FOR N=1 TO 11
3360 READ R
3370 H4(N)=-G*R
3380     NEXT
3390     FOR N=2 TO 12
3400 H5(N-1)= D(N)*D
3410     NEXT
3420 RESTORE 2950
3430     FOR N=1 TO 8
3440 READ R
3450 H6(N)=C(2)*R*K
3460     NEXT
3470     FOR N=9 TO 16
3480 READ R
3490     H6(N)=-C(3)*R*K
3500     NEXT
```

```
3510 FOR N=2 TO 17
3520 H7(N-1)= D*E(N)
3530     NEXT
3540 REM
3550 REM ** THE 4 FILES ARE NAMED TPLT1,TPLT2,TPLT3 AND TPLT4
3560 REM
3570 ERRSET 3960,P,P1\ REM ** SETS ERROR TRAP FOR FILES CREATED PREVIOUSLY.
3580 INPUT" INPUT DRIVE # (1) OR (2) ",K$
3590 !CHR$(4)
3600 CREATE "TPLT1"+",*+K$,10,3
3610 CREATE "TPLT2"+",*+K$,10,3
3620 CREATE "TPLT3" +",*+K$,10,3
3630 CREATE "TPLT4"+",*+K$,10,3
3640 OPEN #1,"TPLT1"+",*+K$
3650     FOR N=1 TO 25
3660 WRITE #1,"SUB VS DISTANCE",N,H1(N),H(N)
3670     NEXT
3680 CLOSE#1
3690 OPEN #1,"TPLT2"+",*+K$
3700 Q=0
3710     FOR N=1 TO 35
3720 IF H2(N)=0 THEN 3750
3730 Q=Q+1
3740 WRITE #1,"STRAIN VS DISTANCE",Q,H3(N),H2(N)
3750     NEXT
3760 CLOSE #1
3770 OPEN #1,"TPLT3"+",*+K$
3780 Q=0
3790     FOR N=1 TO 11
3800 IF H4(N)=0 THEN 3830
3810 Q=Q+1
3820 WRITE #1,"SUB VS LONGITUDINAL DIST",Q,H5(N),H4(N)
3830     NEXT
3840 CLOSE #1
3850 Q=0
3860 OPEN #1,"TPLT4"+",*+K$
3870     FOR N=1 TO 15
3880 IF H6(N)=0 THEN 3910
3890 Q=Q+1
3900 WRITE #1,"STRAIN VS LONGITUDINAL DIST",Q,H7(N),H6(N)
3910     NEXT
3920 CLOSE #1
3930 REM ** CHAIN TO GRAPHIC PROGRAM
3940 CHAIN "SUBGRAF"\REM ** GRAPHICS PROGRAM FOR SUBSIDENSE PLOTS.
3950 REM ** ERROR TRAPS FOR FILES CREATED PREVIOUSLY.
3960 IF P1=7 THEN 3640
```

APPENDIX C

(Data File 1 - Maximum subsidence factors [s/m])

1	.68	.45	.10	.05	.05	.04	.03	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	
2	.85	.80	.75	.65	.55	.33	.25	.20	.10	.08	.05	.04	.03	.03	.03	.02	.02	.02
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	
3	.89	.86	.82	.80	.76	.70	.60	.45	.40	.25	.18	.13	.10	.06	.05	.04	.04	.03
	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.02	.02	.02	.02	.02	.02	.02	.02
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	
4	.90	.88	.84	.85	.84	.80	.77	.70	.65	.50	.40	.33	.25	.20	.20	.15	.10	.10
	.07	.07	.06	.05	.05	.04	.05	.05	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
	.04	.04	.04	.04	.04	.04	.04	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
	.03	.03	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	
5	.91	.89	.87	.86	.86	.83	.80	.77	.74	.65	.55	.47	.39	.33	.26	.25	.20	.18
	.13	.13	.11	.10	.09	.07	.08	.07	.06	.05	.05	.63	.05	.05	.05	.05	.05	.05
	.05	.05	.05	.05	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
	.04	.04	.04	.04	.04	.04	.04	.04	.04	.03	.03	.03	.03	.03	.03	.03	.03	.03
	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	
6	.91	.90	.88	.87	.86	.86	.83	.80	.77	.71	.64	.57	.51	.42	.37	.32	.28	.25
	.23	.20	.18	.15	.14	.13	.11	.10	.10	.08	.08	.08	.08	.07	.07	.07	.06	.06
	.06	.06	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04
	.04	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	
7	.91	.90	.89	.88	.87	.87	.85	.84	.80	.77	.71	.67	.61	.55	.49	.45	.38	.35
	.30	.27	.26	.24	.20	.18	.17	.16	.15	.13	.12	.12	.11	.10	.10	.09	.09	.09
	.08	.08	.08	.08	.08	.08	.07	.07	.07	.07	.07	.07	.07	.07	.06	.05	.05	.05
	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.04	.04	.04	.04
	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	.04	
8	.91	.91	.90	.89	.88	.88	.84	.86	.84	.81	.77	.74	.70	.64	.58	.53	.50	.45
	.40	.38	.36	.32	.30	.28	.25	.24	.22	.20	.19	.18	.16	.15	.15	.14	.14	.13
	.13	.13	.12	.12	.12	.11	.11	.10	.10	.10	.10	.10	.10	.10	.10	.10	.08	.08
	.08	.08	.07	.07	.07	.07	.06	.06	.06	.06	.06	.06	.05	.05	.05	.05	.05	.05
	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.04	.04	.04	.04	
9	.91	.91	.90	.89	.89	.88	.87	.86	.85	.83	.80	.77	.74	.70	.65	.60	.56	.53
	.50	.46	.45	.40	.37	.35	.32	.30	.28	.25	.24	.23	.21	.20	.19	.18	.18	.17
	.17	.16	.15	.15	.15	.15	.14	.14	.14	.13	.13	.12	.12	.12	.11	.11	.10	.10
	.10	.09	.09	.08	.08	.08	.08	.08	.07	.07	.07	.07	.07	.07	.07	.06	.06	.06
	.06	.06	.06	.06	.06	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	
10	.91	.91	.90	.90	.90	.89	.88	.87	.86	.84	.81	.80	.77	.73	.70	.65	.62	.59
	.55	.53	.50	.47	.45	.42	.40	.38	.35	.32	.30	.28	.27	.25	.25	.24	.23	.22
	.21	.21	.20	.20	.19	.18	.18	.17	.16	.16	.15	.15	.15	.15	.14	.14	.12	.12
	.12	.11	.11	.10	.10	.10	.09	.09	.09	.09	.08	.08	.08	.08	.08	.07	.07	.07
	.07	.07	.07	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06	

11	.91	.91	.90	.90	.90	.89	.88	.87	.86	.84	.81	.80	.77	.73	.70	.65	.62	.59
	.55	.53	.50	.47	.45	.42	.40	.38	.35	.32	.30	.28	.27	.25	.25	.24	.23	.22
	.21	.25	.23	.23	.23	.22	.21	.20	.20	.19	.18	.18	.17	.17	.16	.16	.15	.14
	.13	.13	.12	.12	.12	.12	.11	.10	.10	.10	.09	.09	.09	.09	.09	.08	.08	.08
	.08	.08	.08	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	.07	
12	.91	.91	.91	.90	.90	.88	.87	.87	.87	.86	.85	.83	.81	.79	.76	.74	.70	.67
	.65	.63	.61	.58	.55	.55	.51	.50	.47	.44	.41	.40	.38	.35	.35	.38	.32	.30
	.30	.28	.27	.26	.25	.25	.24	.23	.23	.22	.21	.20	.20	.19	.18	.18	.16	.16
	.15	.15	.14	.13	.13	.13	.12	.11	.11	.11	.10	.10	.10	.10	.10	.09	.09	.09
	.09	.09	.09	.08	.08	.08	.08	.08	.08	.08	.08	.07	.07	.07	.07	.07	.07	
13	.92	.91	.91	.90	.90	.89	.87	.87	.87	.87	.86	.85	.83	.81	.80	.77	.75	.73
	.70	.68	.66	.63	.62	.60	.58	.56	.55	.51	.50	.47	.45	.43	.40	.40	.38	.36
	.35	.33	.32	.31	.30	.29	.28	.27	.26	.25	.25	.24	.23	.22	.21	.20	.19	.18
	.18	.17	.16	.16	.15	.15	.14	.14	.13	.13	.12	.12	.12	.11	.11	.11	.10	.10
	.10	.10	.10	.09	.09	.09	.09	.09	.09	.09	.09	.08	.08	.08	.08	.08	.08	
14	.92	.91	.91	.90	.90	.90	.88	.88	.88	.87	.86	.86	.85	.83	.82	.80	.78	.76
	.75	.72	.70	.69	.66	.65	.63	.61	.60	.57	.55	.53	.50	.48	.46	.45	.44	.41
	.40	.38	.36	.35	.34	.33	.32	.30	.30	.29	.28	.27	.25	.25	.24	.23	.22	.21
	.20	.19	.19	.18	.17	.17	.16	.15	.15	.15	.14	.13	.13	.13	.12	.12	.11	.11
	.11	.11	.11	.11	.10	.10	.10	.10	.10	.10	.10	.09	.09	.09	.09	.09	.09	
15	.92	.91	.91	.91	.90	.90	.90	.89	.89	.88	.87	.86	.86	.85	.84	.83	.81	.80
	.78	.75	.75	.72	.70	.69	.67	.65	.64	.62	.60	.57	.55	.53	.50	.49	.47	.46
	.45	.42	.40	.39	.37	.36	.35	.33	.32	.31	.30	.30	.28	.27	.26	.25	.25	.23
	.22	.21	.21	.20	.19	.18	.17	.17	.16	.16	.15	.15	.15	.14	.14	.13	.13	.13
	.12	.12	.12	.12	.12	.11	.11	.11	.11	.11	.11	.11	.11	.10	.10	.10	.10	
16	.92	.91	.91	.91	.91	.90	.90	.90	.89	.88	.87	.86	.86	.86	.85	.84	.83	.81
	.80	.79	.77	.75	.73	.72	.70	.68	.67	.65	.63	.61	.59	.56	.55	.53	.50	.48
	.47	.45	.44	.42	.40	.39	.37	.35	.35	.33	.32	.32	.30	.29	.28	.27	.27	.25
	.24	.23	.23	.21	.20	.20	.19	.18	.17	.17	.16	.16	.15	.15	.15	.15	.14	.14
	.13	.13	.13	.13	.12	.12	.12	.12	.12	.12	.11	.11	.11	.10	.10	.10	.10	
17	.92	.92	.91	.91	.91	.91	.91	.90	.90	.89	.88	.87	.87	.86	.86	.85	.85	.84
	.82	.81	.80	.78	.76	.75	.74	.72	.73	.68	.70	.65	.62	.60	.58	.56	.55	.52
	.50	.48	.46	.45	.43	.42	.40	.39	.37	.35	.35	.34	.32	.31	.30	.30	.29	.26
	.26	.25	.24	.23	.22	.21	.21	.20	.19	.19	.18	.17	.17	.16	.16	.16	.15	.15
	.14	.14	.14	.14	.13	.13	.13	.13	.13	.13	.12	.12	.12	.11	.11	.11	.11	
18	.92	.92	.91	.91	.91	.91	.91	.90	.90	.90	.89	.88	.87	.87	.87	.86	.86	.85
	.85	.83	.82	.81	.80	.78	.77	.75	.74	.72	.70	.68	.66	.64	.62	.60	.58	.56
	.54	.52	.50	.48	.46	.45	.43	.42	.40	.39	.37	.36	.35	.34	.33	.32	.32	.29
	.28	.27	.26	.25	.24	.23	.23	.22	.21	.20	.20	.19	.18	.17	.17	.17	.16	.16
	.16	.15	.15	.15	.15	.14	.14	.14	.14	.14	.13	.13	.13	.13	.13	.13	.13	
19	.92	.92	.91	.91	.91	.91	.91	.91	.90	.90	.89	.89	.88	.87	.87	.87	.86	.86
	.86	.85	.84	.83	.81	.81	.79	.78	.79	.75	.75	.71	.69	.66	.65	.63	.61	.60
	.57	.55	.53	.51	.49	.47	.46	.45	.43	.41	.40	.38	.37	.36	.35	.34	.34	.31
	.30	.29	.28	.27	.26	.25	.25	.24	.23	.23	.22	.21	.20	.20	.19	.18	.18	.18
	.17	.16	.16	.16	.16	.15	.15	.15	.15	.15	.14	.14	.14	.14	.14	.14	.14	
20	.92	.92	.91	.91	.91	.91	.91	.91	.91	.90	.90	.90	.89	.88	.88	.88	.87	.87
	.87	.86	.86	.85	.85	.83	.82	.81	.78	.78	.75	.74	.73	.70	.68	.66	.65	.64
	.61	.58	.56	.55	.53	.50	.49	.47	.45	.43	.42	.41	.40	.38	.37	.37	.36	.34
	.33	.32	.31	.30	.29	.28	.27	.26	.25	.25	.24	.23	.22	.21	.21	.20	.20	.19
	.18	.18	.17	.17	.17	.17	.17	.16	.16	.16	.16	.16	.16	.15	.15	.15	.15	

21	.92	.92	.91	.91	.91	.91	.91	.91	.91	.91	.90	.90	.89	.89	.89	.89	.87	.87
	.87	.86	.86	.85	.85	.85	.83	.83	.83	.79	.80	.76	.75	.72	.70	.69	.67	.65
	.63	.60	.58	.57	.55	.53	.51	.50	.47	.45	.43	.43	.42	.40	.39	.38	.38	.36
	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.25	.24	.23	.22	.21	.21	.20
	.19	.19	.18	.18	.18	.18	.18	.17	.17	.17	.17	.17	.17	.16	.16	.16	.16	
22	.92	.92	.91	.91	.91	.91	.91	.91	.91	.91	.90	.90	.90	.89	.89	.90	.88	.88
	.88	.87	.87	.86	.86	.85	.85	.84	.84	.81	.82	.78	.76	.75	.73	.71	.70	.68
	.66	.63	.61	.60	.57	.55	.54	.52	.50	.48	.47	.45	.44	.43	.42	.41	.40	.38
	.37	.36	.35	.34	.33	.32	.31	.30	.29	.28	.27	.26	.25	.25	.24	.23	.23	.23
	.22	.21	.20	.20	.20	.19	.19	.19	.18	.18	.18	.18	.18	.17	.17	.17	.17	
23	.92	.92	.92	.92	.91	.91	.91	.91	.91	.91	.91	.91	.90	.90	.90	.90	.89	.89
	.88	.87	.87	.86	.86	.86	.85	.85	.85	.83	.83	.80	.78	.76	.75	.73	.72	.70
	.68	.65	.63	.61	.60	.57	.56	.55	.52	.50	.49	.48	.47	.45	.44	.43	.42	.40
	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.30	.28	.27	.26	.26	.25	.25	.24
	.23	.23	.22	.21	.21	.20	.20	.20	.19	.19	.19	.19	.19	.18	.18	.18	.18	
24	.92	.92	.92	.92	.92	.91	.91	.91	.91	.91	.91	.91	.90	.90	.90	.90	.90	.90
	.89	.88	.87	.87	.87	.86	.86	.85	.85	.84	.84	.81	.80	.78	.77	.75	.74	.72
	.70	.67	.65	.63	.62	.60	.58	.56	.55	.53	.52	.50	.49	.47	.46	.45	.44	.42
	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.31	.30	.30	.29	.28	.27	.27	.26
	.25	.25	.24	.23	.23	.22	.22	.22	.22	.21	.20	.20	.20	.20	.20	.20	.19	
25	.92	.92	.92	.92	.92	.92	.91	.91	.91	.91	.91	.91	.90	.90	.90	.90	.90	.90
	.90	.89	.88	.87	.87	.87	.86	.86	.86	.85	.85	.83	.81	.80	.78	.77	.75	.74
	.72	.70	.67	.65	.63	.62	.60	.58	.57	.55	.54	.52	.51	.50	.48	.47	.46	.45
	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.32	.32	.31	.30	.29	.29	.28
	.27	.27	.26	.25	.25	.24	.23	.23	.23	.22	.22	.22	.22	.21	.21	.21	.20	
26	.92	.92	.92	.92	.92	.92	.92	.91	.91	.91	.91	.91	.91	.90	.91	.90	.90	.90
	.90	.89	.88	.88	.87	.87	.87	.86	.86	.85	.85	.84	.83	.81	.80	.78	.76	.75
	.73	.71	.69	.66	.65	.63	.61	.60	.59	.57	.55	.54	.52	.51	.50	.49	.49	.46
	.45	.44	.43	.42	.41	.40	.39	.38	.36	.36	.35	.34	.33	.32	.31	.30	.30	.29
	.28	.28	.27	.26	.25	.25	.24	.24	.24	.24	.23	.23	.23	.22	.22	.22	.21	
27	.92	.92	.92	.92	.92	.92	.92	.92	.91	.91	.91	.91	.91	.91	.91	.91	.91	.90
	.90	.89	.89	.88	.88	.88	.87	.87	.87	.85	.85	.85	.85	.82	.81	.80	.77	.76
	.75	.73	.71	.69	.66	.65	.64	.62	.60	.59	.57	.56	.55	.54	.52	.51	.51	.48
	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.34	.33	.33	.32	.31
	.31	.30	.29	.28	.27	.27	.26	.26	.25	.25	.25	.25	.24	.23	.23	.23	.22	
28	.92	.92	.92	.92	.92	.92	.92	.92	.92	.91	.91	.91	.91	.91	.91	.91	.91	.91
	.90	.90	.89	.89	.89	.89	.89	.87	.87	.85	.86	.85	.85	.83	.82	.81	.80	.78
	.76	.75	.73	.71	.68	.67	.65	.64	.63	.61	.60	.58	.56	.55	.54	.53	.53	.50
	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.35	.34	.33
	.32	.31	.31	.30	.30	.29	.28	.28	.27	.27	.26	.26	.25	.25	.25	.25	.24	
29	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.91	.91	.91	.91	.91	.91
	.90	.90	.90	.90	.88	.88	.88	.87	.87	.86	.86	.86	.85	.84	.83	.82	.81	.79
	.77	.76	.75	.73	.70	.69	.67	.66	.65	.63	.62	.61	.59	.58	.56	.55	.55	.53
	.51	.52	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.39	.38	.37	.36	.35	.35
	.34	.33	.33	.32	.31	.30	.30	.29	.28	.28	.28	.27	.27	.26	.26	.26	.25	
30	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.91	.91	.91	.91	.91
	.91	.90	.90	.90	.90	.89	.88	.88	.86	.86	.86	.86	.86	.85	.84	.83	.82	.80
	.79	.78	.76	.74	.72	.71	.70	.68	.67	.65	.64	.63	.61	.60	.58	.57	.56	.55
	.53	.54	.51	.50	.49	.48	.47	.46	.45	.44	.43	.42	.41	.40	.40	.39	.38	.37
	.36	.35	.35	.34	.33	.32	.32	.32	.31	.30	.30	.29	.28	.28	.28	.28	.27	

31	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.91	.91	.91	.91	.91
	.91	.90	.90	.90	.90	.90	.89	.88	.88	.86	.87	.87	.86	.85	.85	.83	.82	.81
	.81	.79	.78	.75	.73	.72	.71	.70	.68	.66	.65	.64	.62	.61	.60	.59	.58	.56
	.55	.55	.53	.51	.50	.49	.48	.47	.46	.46	.45	.44	.43	.42	.41	.40	.39	.38
	.37	.36	.36	.35	.34	.34	.33	.33	.32	.31	.30	.30	.29	.29	.29	.29	.29	
32	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.91	.91	.91	.91
	.91	.91	.90	.90	.90	.90	.89	.88	.88	.87	.87	.87	.86	.86	.85	.84	.83	.82
	.82	.80	.79	.77	.75	.74	.73	.71	.70	.69	.67	.66	.65	.63	.62	.61	.60	.58
	.56	.56	.55	.54	.53	.51	.50	.49	.48	.47	.46	.45	.45	.43	.43	.42	.41	.40
	.39	.38	.38	.37	.36	.35	.35	.34	.33	.33	.32	.32	.31	.30	.30	.30	.30	
33	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.91	.91	.91	
	.91	.91	.91	.90	.90	.90	.90	.89	.88	.87	.87	.88	.87	.86	.86	.85	.84	.83
	.83	.81	.80	.78	.77	.75	.74	.73	.71	.71	.70	.68	.66	.65	.64	.63	.63	.60
	.59	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45	.45	.44	.43	.41
	.40	.40	.39	.38	.37	.37	.37	.36	.35	.35	.34	.34	.33	.32	.32	.31	.31	
34	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.91	.91
	.91	.91	.91	.91	.90	.90	.90	.90	.89	.87	.88	.88	.87	.86	.86	.85	.85	.84
	.83	.82	.81	.80	.78	.77	.76	.75	.73	.73	.72	.70	.69	.67	.66	.65	.64	.62
	.61	.60	.58	.57	.56	.55	.54	.53	.51	.51	.50	.49	.48	.47	.46	.45	.45	.43
	.43	.42	.41	.40	.40	.39	.38	.38	.37	.36	.35	.35	.34	.34	.34	.33	.33	
35	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.91
	.91	.91	.91	.91	.90	.90	.90	.90	.89	.88	.88	.88	.87	.87	.87	.86	.85	.85
	.84	.82	.81	.81	.80	.78	.77	.76	.75	.75	.73	.72	.70	.69	.68	.67	.66	.64
	.63	.61	.60	.59	.58	.56	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46	.45
	.45	.44	.43	.42	.41	.40	.40	.39	.38	.38	.36	.37	.36	.35	.35	.35	.35	
36	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.91
	.91	.91	.91	.91	.90	.90	.90	.90	.89	.88	.88	.88	.87	.87	.87	.86	.85	.85
	.84	.83	.82	.82	.81	.80	.79	.78	.76	.76	.74	.73	.71	.71	.70	.69	.68	.65
	.64	.63	.61	.60	.60	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46
	.46	.45	.44	.43	.43	.41	.41	.40	.40	.39	.37	.38	.37	.36	.36	.35	.35	
37	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92
	.91	.91	.91	.91	.91	.90	.90	.90	.90	.89	.89	.89	.88	.87	.87	.86	.86	.85
	.85	.83	.82	.82	.81	.80	.79	.78	.76	.76	.74	.73	.71	.71	.70	.69	.68	.65
	.64	.63	.61	.60	.60	.58	.57	.56	.55	.54	.53	.52	.51	.50	.49	.48	.47	.46
	.46	.45	.44	.43	.43	.43	.43	.42	.41	.40	.40	.40	.38	.38	.37	.37	.36	
38	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92
	.92	.91	.91	.91	.91	.91	.90	.90	.90	.89	.89	.89	.88	.88	.87	.87	.86	.86
	.85	.85	.83	.83	.82	.81	.81	.80	.79	.78	.77	.76	.75	.74	.73	.72	.70	.70
	.68	.67	.65	.64	.63	.62	.61	.60	.59	.58	.57	.56	.55	.54	.53	.52	.51	.50
	.49	.48	.47	.47	.46	.45	.44	.43	.43	.42	.41	.41	.40	.40	.40	.39	.38	
39	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92
	.92	.91	.91	.91	.91	.91	.91	.90	.90	.89	.89	.89	.89	.88	.88	.87	.87	.86
	.86	.85	.84	.84	.83	.82	.82	.81	.80	.79	.78	.77	.76	.75	.74	.73	.71	.71
	.70	.69	.67	.66	.65	.64	.63	.62	.61	.60	.59	.58	.56	.55	.55	.54	.53	.52
	.51	.50	.49	.49	.47	.46	.46	.45	.44	.43	.43	.43	.41	.41	.41	.40	.40	
40	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92	.92
	.92	.92	.91	.91	.91	.91	.91	.91	.90	.90	.89	.89	.89	.88	.88	.87	.87	.87
	.86	.86	.85	.85	.84	.83	.82	.82	.81	.80	.79	.78	.77	.76	.75	.74	.72	.72
	.71	.70	.69	.67	.66	.65	.65	.64	.62	.61	.60	.60	.58	.57	.56	.55	.55	.54
	.53	.52	.51	.50	.50	.49	.48	.47	.46	.45	.45	.45	.43	.42	.42	.42	.41	

APPENDIX D

(Data File 2 - Transverse subsidence profile, relationship between w/h and d/h for various points on the profile)

1	.20	.80	.64	.57	.48	.41	.37	.32	.28	.23	.19	.13	.08	.00
2	.22	.81	.63	.53	.46	.39	.34	.30	.26	.21	.17	.11	.08	.00
3	.24	.82	.62	.53	.43	.36	.32	.28	.24	.20	.16	.11	.07	.00
4	.26	.83	.62	.52	.41	.35	.30	.26	.22	.17	.15	.10	.07	.00
5	.28	.84	.61	.51	.39	.33	.28	.24	.21	.18	.14	.09	.07	.00
6	.30	.85	.61	.50	.38	.32	.27	.23	.20	.17	.13	.09	.06	.00
7	.32	.86	.60	.49	.37	.31	.26	.22	.20	.16	.13	.09	.06	.00
8	.34	.87	.60	.48	.36	.30	.25	.22	.19	.16	.12	.08	.06	.00
9	.36	.88	.60	.48	.35	.29	.25	.21	.18	.15	.12	.08	.06	.00
10	.38	.89	.60	.48	.35	.29	.24	.21	.18	.15	.12	.08	.06	.00
11	.40	.90	.59	.47	.34	.28	.24	.21	.18	.15	.12	.08	.06	.00
12	.42	.91	.59	.47	.34	.28	.24	.20	.17	.15	.12	.08	.06	.00
13	.44	.92	.59	.47	.33	.28	.23	.20	.17	.15	.12	.08	.06	.00
14	.46	.93	.59	.47	.33	.28	.23	.20	.17	.15	.12	.08	.06	.00
15	.48	.94	.59	.47	.33	.28	.23	.20	.17	.15	.12	.08	.06	.00
16	.50	.95	.59	.47	.34	.28	.24	.21	.17	.15	.12	.08	.06	.00
17	.52	.96	.59	.47	.34	.28	.24	.21	.17	.15	.12	.08	.06	.00
18	.54	.97	.59	.47	.34	.29	.25	.21	.18	.15	.12	.08	.06	.00
19	.56	.98	.59	.47	.35	.29	.25	.21	.18	.15	.12	.08	.04	.00
20	.58	.99	.59	.47	.35	.30	.25	.22	.18	.16	.13	.09	.06	.00
21	.60	1.00	.59	.47	.36	.30	.26	.22	.19	.16	.13	.09	.04	.00
22	.62	1.01	.59	.47	.37	.31	.27	.23	.19	.16	.13	.09	.06	.00
23	.64	1.02	.59	.48	.37	.31	.27	.23	.20	.17	.13	.09	.06	.00
24	.66	1.03	.60	.48	.38	.32	.28	.24	.20	.17	.13	.09	.06	.00
25	.68	1.04	.60	.49	.38	.32	.28	.24	.21	.17	.14	.09	.06	.00
26	.70	1.05	.60	.49	.39	.33	.29	.25	.21	.18	.14	.10	.07	.00
27	.72	1.06	.61	.50	.39	.34	.30	.26	.22	.18	.14	.10	.07	.00
28	.74	1.07	.61	.50	.40	.34	.30	.26	.23	.18	.15	.10	.07	.00
29	.76	1.08	.62	.51	.41	.35	.31	.27	.23	.19	.15	.10	.07	.00
30	.78	1.09	.63	.52	.42	.36	.32	.28	.24	.20	.16	.11	.07	.00
31	.80	1.10	.63	.52	.42	.36	.32	.28	.25	.21	.16	.11	.08	.00
32	.82	1.11	.64	.53	.43	.37	.33	.29	.25	.21	.17	.11	.08	.00
33	.84	1.12	.65	.54	.44	.38	.34	.29	.26	.21	.17	.12	.08	.00
34	.86	1.13	.66	.55	.45	.39	.35	.30	.26	.22	.18	.12	.09	.00
35	.88	1.14	.67	.56	.45	.40	.36	.31	.27	.23	.18	.13	.09	.00
36	.90	1.15	.68	.57	.46	.40	.36	.32	.28	.24	.20	.13	.10	.00
37	.92	1.16	.68	.57	.47	.41	.37	.32	.29	.25	.20	.14	.10	.00
38	.94	1.17	.69	.58	.48	.42	.38	.33	.30	.26	.21	.15	.10	.00
39	.96	1.18	.70	.59	.49	.43	.39	.34	.31	.26	.22	.16	.11	.00
40	.98	1.19	.71	.60	.50	.44	.40	.35	.32	.27	.23	.16	.11	.00
41	1.00	1.20	.72	.61	.51	.45	.41	.36	.33	.28	.24	.17	.12	.00
42	1.10	1.25	.77	.65	.55	.50	.45	.42	.38	.34	.29	.21	.16	.00
43	1.20	1.30	.81	.70	.60	.54	.50	.46	.42	.38	.33	.25	.19	.00
44	1.30	1.35	.86	.75	.65	.59	.55	.51	.47	.43	.38	.30	.23	.00
45	1.40	1.40	.91	.80	.70	.64	.60	.56	.52	.48	.43	.35	.27	.01
46	1.60	1.50	1.01	.90	.80	.74	.70	.66	.62	.58	.53	.45	.37	.05
47	1.80	1.60	1.11	1.00	.90	.84	.80	.76	.72	.68	.63	.55	.47	.10
48	2.00	1.70	1.21	1.09	.99	.94	.90	.86	.82	.78	.73	.65	.57	.16
49	2.20	1.80	1.31	1.19	1.09	1.04	1.00	.96	.92	.88	.83	.75	.67	.23
50	2.40	1.90	1.41	1.29	1.19	1.14	1.10	1.06	1.02	.98	.93	.85	.77	.31

51	2.60	2.00	1.51	1.39	1.29	1.24	1.19	1.16	1.12	1.08	1.03	.95	.87	.41
52	2.80	2.10	1.61	1.49	1.39	1.34	1.29	1.26	1.22	1.18	1.13	1.05	.97	.51
53	3.00	2.20	1.71	1.59	1.49	1.44	1.39	1.36	1.32	1.28	1.23	1.15	1.07	.61
54	3.20	2.30	1.81	1.69	1.59	1.54	1.49	1.46	1.42	1.38	1.33	1.25	1.17	.71
55	3.40	2.40	1.91	1.79	1.69	1.64	1.59	1.56	1.52	1.48	1.43	1.35	1.27	.81
56	3.60	2.50	2.01	1.89	1.79	1.74	1.69	1.66	1.62	1.58	1.53	1.45	1.37	.91
57	3.80	2.60	2.11	1.99	1.89	1.84	1.79	1.76	1.72	1.68	1.63	1.55	1.47	1.01
58	4.00	2.70	2.21	2.09	1.99	1.94	1.89	1.86	1.82	1.78	1.73	1.65	1.57	1.11
59	4.20	2.80	2.31	2.19	2.09	2.04	1.99	1.96	1.92	1.88	1.83	1.75	1.67	1.21
60	4.40	2.90	2.41	2.29	2.19	2.14	2.09	2.06	2.02	1.98	1.93	1.85	1.77	1.31
61	4.60	3.00	2.51	2.39	2.29	2.24	2.19	2.16	2.12	2.08	2.03	1.95	1.87	1.41
62	4.80	3.10	2.61	2.49	2.39	2.34	2.29	2.26	2.22	2.18	2.13	2.05	1.97	1.51
63	5.00	3.20	2.71	2.59	2.49	2.44	2.39	2.36	2.32	2.28	2.23	2.15	2.07	1.61
64	5.20	3.30	2.81	2.69	2.59	2.54	2.49	2.46	2.42	2.38	2.33	2.25	2.17	1.71
65	5.40	3.40	2.91	2.79	2.69	2.64	2.59	2.56	2.52	2.48	2.43	2.35	2.27	1.81
66	5.60	3.50	3.01	2.89	2.79	2.74	2.69	2.66	2.62	2.58	2.53	2.45	2.37	1.91
67	5.80	3.60	3.11	2.99	2.89	2.84	2.79	2.76	2.72	2.68	2.63	2.55	2.47	2.01
68	6.00	3.70	3.21	3.09	2.99	2.94	2.89	2.86	2.82	2.78	2.73	2.65	2.57	2.11
69	6.20	3.80	3.31	3.19	3.09	3.04	2.99	2.96	2.92	2.88	2.83	2.75	2.67	2.21
70	6.40	3.90	3.41	3.29	3.19	3.14	3.09	3.06	3.02	2.98	2.93	2.85	2.77	2.31
71	6.60	4.00	3.51	3.39	3.29	3.24	3.19	3.16	3.12	3.08	3.03	2.95	2.87	2.41
72	6.80	4.10	3.61	3.49	3.39	3.34	3.29	3.26	3.22	3.18	3.13	3.05	2.97	2.51
73	7.00	4.20	3.71	3.59	3.49	3.44	3.39	3.36	3.32	3.28	3.23	3.15	3.07	2.61
74	7.20	4.30	3.81	3.69	3.59	3.54	3.49	3.46	3.42	3.38	3.33	3.25	3.17	2.71
75	7.40	4.40	3.91	3.79	3.69	3.64	3.59	3.56	3.52	3.48	3.43	3.35	3.27	2.81
76	7.60	4.50	4.01	3.89	3.79	3.74	3.69	3.66	3.62	3.58	3.53	3.45	3.37	2.91
77	7.80	4.60	4.11	3.99	3.89	3.84	3.79	3.76	3.72	3.68	3.63	3.55	3.47	3.01
78	8.00	4.70	4.21	4.09	3.99	3.94	3.89	3.86	3.82	3.78	3.73	3.65	3.57	3.11
79	8.20	4.80	4.31	4.19	4.09	4.04	3.99	3.96	3.92	3.88	3.83	3.75	3.67	3.21
80	8.40	4.90	4.41	4.29	4.19	4.14	4.09	4.06	4.02	3.98	3.93	3.85	3.77	3.31
81	8.60	5.00	4.51	4.39	4.29	4.24	4.19	4.16	4.12	4.08	4.03	3.95	3.87	3.41
82	8.80	5.10	4.61	4.49	4.39	4.34	4.29	4.26	4.22	4.18	4.13	4.05	3.97	3.51
83	9.00	5.20	4.71	4.59	4.49	4.44	4.39	4.36	4.32	4.28	4.23	4.15	4.07	3.61
84	9.20	5.30	4.81	4.69	4.59	4.54	4.49	4.46	4.42	4.38	4.33	4.25	4.17	3.71
85	9.40	5.40	4.91	4.79	4.69	4.64	4.59	4.56	4.52	4.48	4.43	4.35	4.27	3.81
86	9.60	5.50	5.01	4.89	4.79	4.74	4.69	4.66	4.62	4.58	4.53	4.45	4.37	3.91
87	9.80	5.60	5.11	4.99	4.89	4.84	4.79	4.76	4.72	4.68	4.63	4.55	4.47	4.01
88	10.00	5.70	5.21	5.09	4.99	4.94	4.89	4.86	4.82	4.78	4.73	4.65	4.57	4.11
89	10.20	5.80	5.31	5.19	5.09	5.04	4.99	4.96	4.92	4.88	4.83	4.75	4.67	4.21
90	10.40	5.90	5.41	5.29	5.19	5.14	5.09	5.06	5.02	4.98	4.93	4.85	4.77	4.31
91	10.60	6.00	5.51	5.39	5.29	5.24	5.19	5.16	5.12	5.08	5.03	4.95	4.87	4.41
92	10.80	6.10	5.61	5.49	5.39	5.34	5.29	5.26	5.22	5.18	5.13	5.05	4.97	4.51
93	11.00	6.20	5.71	5.59	5.49	5.44	5.39	5.36	5.32	5.28	5.23	5.15	5.07	4.61
94	11.20	6.30	5.81	5.69	5.59	5.54	5.49	5.46	5.42	5.38	5.33	5.25	5.17	4.71
95	11.40	6.40	5.91	5.79	5.69	5.64	5.59	5.56	5.52	5.48	5.43	5.35	5.27	4.81
96	11.60	6.50	6.01	5.89	5.79	5.74	5.69	5.66	5.62	5.58	5.53	5.45	5.37	4.91
97	11.80	6.60	6.11	5.99	5.89	5.84	5.79	5.76	5.72	5.68	5.63	5.55	5.47	5.01
98	12.00	6.70	6.21	6.09	5.99	5.94	5.89	5.86	5.82	5.78	5.73	5.65	5.57	5.11
99	12.20	6.80	6.31	6.19	6.09	6.04	5.99	5.96	5.92	5.88	5.83	5.75	5.67	5.21
100	12.40	6.90	6.41	6.29	6.19	6.14	6.09	6.06	6.02	5.98	5.93	5.85	5.77	5.31

101	12.60	7.00	6.51	6.39	6.29	6.24	6.19	6.16	6.12	6.08	6.03	5.95	5.87	5.41
102	12.80	7.10	6.61	6.49	6.39	6.34	6.29	6.26	6.22	6.18	6.13	6.05	5.97	5.51
103	13.00	7.20	6.71	6.59	6.49	6.44	6.39	6.36	6.32	6.28	6.23	6.15	6.07	5.61
104	13.20	7.30	6.81	6.69	6.59	6.54	6.49	6.46	6.42	6.38	6.33	6.25	6.17	5.71
105	13.40	7.40	6.91	6.79	6.69	6.64	6.59	6.56	6.52	6.48	6.43	6.35	6.27	5.81
106	13.60	7.50	7.01	6.89	6.79	6.74	6.69	6.66	6.62	6.58	6.53	6.45	6.37	5.91
107	13.80	7.60	7.11	6.99	6.89	6.84	6.79	6.76	6.72	6.68	6.63	6.55	6.47	6.01
108	14.00	7.70	7.21	7.09	6.99	6.94	6.89	6.86	6.82	6.78	6.73	6.65	6.57	6.11

APPENDIX E

(Data File 3 - Maximum tensile and compressive strain factors for various w/h ratios)

1	.20	.55	2.25
2	.22	.60	2.20
3	.24	.60	2.20
4	.26	.65	2.10
5	.28	.65	2.05
6	.30	.70	2.00
7	.32	.70	1.95
8	.34	.75	1.90
9	.36	.80	1.85
10	.38	.80	1.80
11	.40	.80	1.70
12	.42	.80	1.65
13	.44	.80	1.60
14	.46	.85	1.50
15	.48	.80	1.45
16	.50	.80	1.40
17	.52	.80	1.30
18	.54	.80	1.20
19	.56	.80	1.15
20	.58	.80	1.10
21	.60	.80	1.05
22	.62	.75	1.00
23	.64	.75	.95
24	.66	.70	.90
25	.68	.70	.90
26	.70	.70	.85
27	.72	.70	.80
28	.74	.70	.80
29	.76	.65	.75
30	.78	.65	.70
31	.82	.65	.70
32	.84	.65	.65
33	.86	.65	.60
34	.88	.65	.60
35	.90	.65	.60
36	.92	.65	.60
37	.94	.65	.60
38	.96	.65	.60
39	.98	.65	.60
40	1.00	.65	.55
41	1.10	.65	.55
42	1.20	.65	.50
43	1.30	.65	.50
44	1.40	.65	.50
45	1.60	.65	.50
46	1.80	.65	.50
47	2.00	.65	.50
48	2.20	.65	.50
49	2.40	.65	.50
50	2.60	.65	.50

51	2.80	.65	.50
52	3.00	.65	.50
53	3.20	.65	.50
54	3.40	.65	.50
55	3.60	.65	.50
56	3.80	.65	.50
57	4.00	.65	.50
58	4.20	.65	.50
59	4.40	.65	.50
60	4.60	.65	.50
61	4.80	.65	.50
62	5.00	.65	.50
63	5.20	.65	.50
64	5.40	.65	.50
65	5.60	.65	.50
66	5.80	.65	.50
67	6.00	.65	.50
68	6.20	.65	.50
69	6.40	.65	.50
70	6.60	.65	.50
71	6.80	.65	.50
72	7.00	.65	.50
73	7.20	.65	.50
74	7.40	.65	.50
75	7.60	.65	.50
76	7.80	.65	.50
77	8.00	.65	.50
78	8.20	.65	.50
79	8.40	.65	.50
80	8.60	.65	.50
81	8.80	.65	.50
82	9.00	.65	.50
83	9.20	.65	.50
84	9.40	.65	.50
85	9.60	.65	.50
86	9.80	.65	.50
87	10.00	.65	.50
88	10.20	.65	.50
89	10.40	.65	.50
90	10.60	.65	.50
91	10.80	.65	.50
92	11.00	.65	.50
93	11.20	.65	.50
94	11.40	.65	.50
95	11.60	.65	.50
96	11.80	.65	.50
97	12.00	.65	.50
98	12.20	.65	.50
99	12.40	.65	.50
100	12.60	.65	.50

101	12.80	.65	.50
102	13.00	.65	.50
103	13.20	.65	.50
104	13.40	.65	.50
105	13.60	.65	.50
106	13.80	.65	.50
107	14.00	.65	.50

APPENDIX F

(Data File 4 - Transverse strain profile, relationship between w/h and d/h for various points on the profile)

1	.20	.80	.74	.69	.66	.61	.49	.42	.38	.27	.23	.18	.12	.00	.00	.00	.00	.00	.00
2	.22	.81	.72	.66	.63	.58	.47	.39	.34	.23	.21	.16	.11	.00	.00	.00	.00	.00	.00
3	.24	.82	.70	.63	.60	.54	.44	.37	.34	.23	.20	.15	.10	.00	.00	.00	.00	.00	.00
4	.26	.83	.68	.60	.57	.51	.41	.35	.32	.22	.18	.14	.09	.00	.00	.00	.00	.00	.00
5	.28	.84	.66	.58	.54	.49	.39	.33	.30	.21	.17	.13	.08	.00	.00	.00	.00	.00	.00
6	.30	.85	.65	.57	.51	.47	.37	.32	.28	.20	.16	.12	.08	.00	.00	.00	.00	.00	.00
7	.32	.86	.63	.55	.49	.45	.35	.30	.26	.19	.16	.12	.07	.00	.00	.00	.00	.00	.00
8	.34	.87	.62	.54	.48	.43	.34	.30	.24	.19	.15	.11	.07	.00	.00	.00	.00	.00	.00
9	.36	.88	.62	.53	.46	.42	.33	.29	.23	.18	.15	.11	.07	.00	.00	.00	.00	.00	.00
10	.38	.89	.61	.53	.45	.41	.32	.28	.22	.18	.15	.11	.07	.00	.00	.00	.00	.00	.00
11	.40	.90	.61	.52	.45	.40	.32	.28	.22	.18	.15	.11	.07	.00	.00	.00	.00	.00	.00
12	.42	.91	.60	.51	.44	.39	.31	.27	.21	.18	.15	.11	.07	.00	.00	.00	.00	.00	.00
13	.44	.92	.60	.51	.43	.39	.31	.27	.21	.18	.15	.11	.07	.00	.00	.00	.00	.00	.00
14	.46	.93	.60	.51	.43	.38	.31	.27	.21	.18	.15	.11	.07	.01	.00	.00	.00	.00	.00
15	.48	.94	.60	.51	.43	.38	.31	.27	.21	.18	.15	.11	.08	.01	.00	.00	.00	.00	.00
16	.50	.95	.60	.51	.43	.38	.31	.27	.20	.18	.15	.12	.08	.01	.00	.00	.00	.00	.00
17	.52	.96	.60	.51	.43	.38	.32	.27	.20	.18	.16	.12	.08	.02	.00	.00	.00	.00	.00
18	.54	.97	.61	.51	.43	.39	.32	.27	.20	.18	.16	.12	.09	.02	.00	.00	.00	.00	.00
19	.56	.98	.61	.51	.43	.39	.32	.28	.20	.19	.16	.13	.09	.03	.00	.00	.00	.00	.00
20	.58	.99	.62	.51	.44	.39	.33	.28	.21	.19	.17	.13	.10	.03	.00	.00	.00	.00	.00
21	.60	1.00	.62	.52	.45	.40	.34	.29	.21	.20	.18	.14	.11	.05	.00	.00	.00	.00	.00
22	.62	1.01	.63	.52	.45	.41	.34	.30	.22	.21	.18	.15	.12	.05	.00	.00	.00	.00	.00
23	.64	1.02	.63	.53	.46	.41	.35	.31	.22	.21	.19	.15	.12	.06	.00	.00	.00	.00	.00
24	.66	1.03	.64	.53	.47	.42	.36	.31	.22	.22	.19	.16	.13	.07	.00	.00	.00	.00	.00
25	.68	1.04	.64	.54	.47	.43	.37	.32	.23	.22	.20	.16	.13	.07	.00	.00	.00	.00	.00
26	.70	1.05	.65	.54	.48	.44	.37	.33	.23	.23	.20	.17	.14	.08	.00	.00	.00	.00	.00
27	.72	1.06	.66	.55	.49	.44	.38	.34	.24	.24	.21	.17	.15	.09	.00	.00	.00	.00	.00
28	.74	1.07	.67	.56	.50	.45	.39	.35	.24	.24	.22	.18	.15	.09	.01	.00	.00	.00	.00
29	.76	1.08	.67	.57	.51	.46	.40	.36	.25	.25	.22	.19	.16	.10	.01	.00	.00	.00	.00
30	.78	1.09	.68	.57	.52	.47	.41	.36	.26	.26	.23	.20	.17	.11	.02	.00	.00	.00	.00
31	.80	1.10	.69	.58	.53	.48	.42	.37	.29	.26	.24	.20	.17	.11	.02	.00	.00	.00	.00
32	.82	1.11	.70	.59	.53	.48	.43	.38	.29	.27	.25	.21	.18	.12	.03	.00	.00	.00	.00
33	.84	1.12	.71	.60	.54	.49	.44	.39	.30	.28	.25	.22	.19	.13	.04	.00	.00	.00	.00
34	.86	1.13	.72	.61	.55	.50	.45	.40	.31	.29	.26	.23	.20	.14	.05	.00	.00	.00	.00
35	.88	1.14	.73	.62	.56	.51	.46	.41	.32	.29	.27	.24	.21	.15	.05	.01	.00	.00	.00
36	.90	1.15	.74	.63	.57	.52	.46	.42	.33	.30	.28	.24	.21	.15	.06	.02	.00	.00	.00
37	.92	1.16	.75	.64	.58	.53	.47	.43	.34	.31	.29	.25	.22	.16	.07	.02	.00	.00	.00
38	.94	1.17	.76	.65	.59	.54	.48	.44	.35	.32	.30	.26	.23	.17	.08	.03	.00	.00	.00
39	.96	1.18	.77	.66	.60	.55	.49	.45	.35	.33	.30	.27	.24	.18	.09	.04	.00	.00	.00
40	.98	1.19	.78	.67	.61	.56	.50	.46	.36	.34	.31	.28	.25	.19	.09	.04	.00	.00	.00
41	1.00	1.20	.79	.68	.62	.57	.51	.47	.37	.35	.32	.29	.26	.20	.10	.05	.00	.00	.00
42	1.10	1.25	.83	.72	.66	.61	.56	.52	.42	.39	.37	.33	.31	.24	.15	.09	.03	.00	.00
43	1.20	1.30	.88	.77	.71	.66	.61	.56	.46	.44	.41	.38	.35	.29	.20	.13	.07	.02	.00
44	1.30	1.35	.93	.82	.76	.70	.65	.61	.51	.49	.46	.43	.40	.34	.25	.18	.12	.05	.00
45	1.40	1.40	.98	.87	.81	.75	.70	.66	.56	.53	.51	.48	.45	.39	.30	.20	.20	.10	.00
46	1.60	1.50	1.10	1.00	.91	.85	.80	.76	.66	.63	.61	.58	.55	.49	.40	.30	.30	.20	.00
47	1.80	1.60	1.20	1.10	1.00	.95	.90	.86	.76	.73	.71	.68	.65	.59	.50	.40	.40	.30	.10
48	2.00	1.70	1.30	1.20	1.10	1.10	1.00	1.00	.90	.80	.80	.80	.70	.70	.60	.50	.47	.40	.20
49	2.20	1.80	1.40	1.30	1.20	1.20	1.10	1.10	1.00	.90	.90	.90	.80	.80	.70	.63	.57	.50	.30
50	2.40	1.90	1.50	1.40	1.30	1.30	1.20	1.20	1.10	1.00	1.00	1.00	.90	.90	.80	.73	.67	.60	.40

51	2.60	2.00	1.60	1.50	1.40	1.40	1.30	1.30	1.20	1.10	1.10	1.10	1.00	1.00	.90	.83	.77	.70	.50
52	2.80	2.10	1.70	1.60	1.50	1.50	1.40	1.40	1.30	1.20	1.20	1.20	1.10	1.10	1.00	.93	.88	.80	.60
53	3.00	2.20	1.80	1.70	1.60	1.60	1.50	1.50	1.40	1.30	1.30	1.30	1.20	1.20	1.10	1.00	1.00	.90	.70
54	3.20	2.30	1.90	1.80	1.70	1.70	1.60	1.50	1.50	1.40	1.40	1.40	1.30	1.30	1.20	1.10	1.10	1.00	.80
55	3.40	2.40	2.00	1.90	1.80	1.70	1.70	1.60	1.50	1.50	1.50	1.40	1.40	1.40	1.30	1.20	1.20	1.10	.90
56	3.60	2.50	2.10	2.00	1.90	1.80	1.80	1.70	1.60	1.60	1.60	1.50	1.50	1.50	1.40	1.30	1.30	1.20	1.00
57	3.80	2.60	2.20	2.10	2.00	1.90	1.90	1.80	1.70	1.70	1.70	1.60	1.60	1.60	1.50	1.40	1.40	1.30	1.10
58	4.00	2.70	2.30	2.20	2.10	2.00	2.00	1.90	1.80	1.80	1.80	1.70	1.70	1.70	1.60	1.50	1.50	1.40	1.20
59	4.20	2.80	2.40	2.30	2.20	2.10	2.10	2.00	1.90	1.90	1.90	1.80	1.80	1.80	1.70	1.60	1.50	1.50	1.30
60	4.40	2.90	2.50	2.40	2.30	2.20	2.20	2.10	2.00	2.00	2.00	2.00	1.90	1.90	1.80	1.70	1.60	1.60	1.40
61	4.60	3.00	2.60	2.50	2.40	2.30	2.30	2.20	2.10	2.10	2.10	2.10	2.00	2.00	1.90	1.80	1.70	1.70	1.50
62	4.80	3.10	2.70	2.60	2.50	2.40	2.40	2.30	2.20	2.20	2.20	2.20	2.10	2.10	2.00	1.90	1.80	1.80	1.60
63	5.00	3.20	2.80	2.70	2.60	2.50	2.50	2.40	2.30	2.30	2.30	2.30	2.20	2.20	2.10	2.00	1.90	1.90	1.70
64	5.20	3.30	2.90	2.80	2.70	2.60	2.60	2.50	2.40	2.40	2.40	2.40	2.30	2.30	2.20	2.10	2.00	2.00	1.80
65	5.40	3.40	3.00	2.90	2.80	2.70	2.70	2.60	2.50	2.50	2.50	2.50	2.40	2.40	2.30	2.20	2.10	2.10	1.90
66	5.60	3.50	3.10	3.00	2.90	2.80	2.80	2.70	2.60	2.60	2.60	2.60	2.50	2.50	2.40	2.30	2.20	2.20	2.00
67	5.80	3.60	3.20	3.10	3.00	2.90	2.90	2.80	2.70	2.70	2.70	2.70	2.60	2.60	2.50	2.40	2.30	2.30	2.10
68	6.00	3.70	3.30	3.20	3.10	3.00	3.00	2.90	2.80	2.80	2.80	2.80	2.70	2.70	2.60	2.50	2.40	2.40	2.20
69	6.20	3.80	3.40	3.30	3.20	3.10	3.10	3.00	2.90	2.90	2.90	2.90	2.80	2.80	2.70	2.60	2.50	2.50	2.30
70	6.40	3.90	3.50	3.40	3.30	3.20	3.20	3.10	3.00	3.00	3.00	3.00	2.90	2.90	2.80	2.70	2.60	2.60	2.40
71	6.60	4.00	3.60	3.50	3.40	3.30	3.30	3.20	3.10	3.10	3.10	3.10	3.00	3.00	2.90	2.80	2.70	2.70	2.50
72	6.80	4.10	3.70	3.60	3.50	3.40	3.40	3.30	3.20	3.20	3.20	3.20	3.10	3.10	3.00	2.90	2.80	2.80	2.60
73	7.00	4.20	3.80	3.70	3.60	3.50	3.50	3.40	3.30	3.30	3.30	3.30	3.20	3.20	3.10	3.00	2.90	2.90	2.70
74	7.20	4.30	3.90	3.80	3.70	3.60	3.60	3.50	3.40	3.40	3.40	3.40	3.30	3.30	3.20	3.10	3.00	3.00	2.80
75	7.40	4.40	4.00	3.90	3.80	3.70	3.70	3.60	3.50	3.50	3.50	3.50	3.40	3.40	3.30	3.20	3.10	3.10	2.90
76	7.60	4.50	4.10	4.00	3.90	3.80	3.80	3.70	3.60	3.60	3.60	3.60	3.50	3.50	3.40	3.30	3.20	3.20	3.00
77	7.80	4.60	4.20	4.10	4.00	3.90	3.90	3.80	3.70	3.70	3.70	3.70	3.60	3.60	3.50	3.40	3.30	3.30	3.10
78	8.00	4.70	4.30	4.20	4.10	4.00	4.00	3.90	3.80	3.80	3.80	3.80	3.70	3.70	3.60	3.50	3.40	3.40	3.20
79	8.20	4.80	4.40	4.30	4.20	4.10	4.10	4.00	3.90	3.90	3.90	3.80	3.80	3.80	3.70	3.60	3.50	3.50	3.30
80	8.40	4.90	4.50	4.40	4.30	4.20	4.20	4.10	4.00	4.00	4.00	3.90	3.90	3.90	3.80	3.70	3.60	3.60	3.40
81	8.60	5.00	4.60	4.50	4.40	4.30	4.30	4.20	4.10	4.10	4.10	4.00	4.00	4.00	3.90	3.80	3.70	3.70	3.50
82	8.80	5.10	4.70	4.60	4.50	4.40	4.40	4.30	4.20	4.20	4.20	4.10	4.10	4.10	4.00	3.90	3.80	3.80	3.60
83	9.00	5.20	4.80	4.70	4.60	4.50	4.50	4.40	4.30	4.30	4.30	4.20	4.20	4.20	4.10	4.00	3.90	3.90	3.70
84	9.20	5.30	4.90	4.80	4.70	4.60	4.60	4.50	4.40	4.40	4.40	4.30	4.30	4.30	4.20	4.10	4.00	4.00	3.80
85	9.40	5.40	5.00	4.90	4.80	4.70	4.60	4.60	4.50	4.50	4.50	4.40	4.40	4.40	4.30	4.20	4.10	4.10	3.90
86	9.60	5.50	5.10	5.00	4.90	4.80	4.70	4.70	4.60	4.60	4.60	4.50	4.50	4.50	4.40	4.30	4.20	4.20	4.00
87	9.80	5.60	5.20	5.10	5.00	4.90	4.80	4.80	4.70	4.70	4.70	4.60	4.60	4.60	4.50	4.40	4.30	4.30	4.10
88	10.00	5.70	5.30	5.20	5.10	5.00	4.90	4.90	4.80	4.80	4.80	4.70	4.70	4.70	4.60	4.50	4.40	4.40	4.20
89	10.20	5.80	5.40	5.20	5.20	5.10	5.00	5.00	4.90	4.90	4.90	4.80	4.80	4.80	4.70	4.60	4.50	4.50	4.30
90	10.40	5.90	5.50	5.30	5.30	5.20	5.20	5.10	5.00	5.00	5.00	4.90	4.90	4.90	4.80	4.70	4.60	4.60	4.40
91	10.60	6.00	5.60	5.40	5.40	5.30	5.30	5.20	5.10	5.10	5.10	5.00	5.00	5.00	4.90	4.80	4.70	4.70	4.50
92	10.80	6.10	5.70	5.50	5.50	5.40	5.40	5.30	5.20	5.20	5.20	5.10	5.10	5.10	5.00	4.90	4.80	4.80	4.60
93	11.00	6.20	5.80	5.60	5.60	5.50	5.50	5.40	5.30	5.30	5.30	5.20	5.20	5.20	5.10	5.00	4.90	4.90	4.70
94	11.20	6.30	5.90	5.70	5.70	5.60	5.60	5.50	5.40	5.40	5.40	5.30	5.30	5.30	5.20	5.10	5.00	5.00	4.80
95	11.40	6.40	6.00	5.80	5.80	5.70	5.70	5.60	5.50	5.50	5.50	5.40	5.40	5.40	5.30	5.20	5.10	5.10	4.90
96	11.60	6.50	6.10	5.90	5.90	5.80	5.80	5.70	5.60	5.60	5.60	5.50	5.50	5.50	5.40	5.30	5.20	5.20	5.00
97	11.80	6.60	6.20	6.00	6.00	5.90	5.90	5.80	5.70	5.70	5.70	5.60	5.60	5.60	5.50	5.40	5.30	5.30	5.10
98	12.00	6.70	6.30	6.10	6.10	6.00	6.00	5.90	5.80	5.80	5.80	5.70	5.70	5.70	5.60	5.50	5.40	5.40	5.20
99	12.20	6.80	6.40	6.20	6.20	6.10	6.10	6.00	5.90	5.90	5.90	5.80	5.80	5.80	5.70	5.60	5.50	5.50	5.30
100	12.40	6.90	6.50	6.30	6.30	6.20	6.10	6.10	6.00	6.00	6.00	5.90	5.90	5.90	5.80	5.70	5.60	5.60	5.40

101	12.60	7.00	6.60	6.40	6.40	6.30	6.20	6.20	6.10	6.10	6.10	6.00	6.00	6.00	5.90	5.80	5.70	5.70	5.50
102	12.80	7.10	6.70	6.50	6.50	6.40	6.30	6.30	6.20	6.20	6.20	6.10	6.10	6.10	6.00	5.90	5.80	5.80	5.60
103	13.00	7.20	6.80	6.60	6.60	6.50	6.40	6.40	6.30	6.30	6.30	6.20	6.20	6.20	6.10	6.00	5.90	5.90	5.70
104	13.20	7.30	6.90	6.70	6.70	6.60	6.50	6.50	6.40	6.40	6.40	6.30	6.30	6.30	6.20	6.10	6.00	6.00	5.80
105	13.40	7.40	7.00	6.90	6.80	6.70	6.60	6.60	6.50	6.50	6.40	6.40	6.40	6.40	6.30	6.20	6.10	6.00	5.90
106	13.60	7.50	7.10	7.00	6.90	6.80	6.80	6.70	6.60	6.60	6.50	6.50	6.50	6.50	6.40	6.30	6.20	6.10	6.00
107	13.80	7.60	7.20	7.10	7.00	6.90	6.90	6.80	6.70	6.70	6.60	6.60	6.60	6.60	6.50	6.40	6.30	6.20	6.10
108	14.00	7.70	7.30	7.20	7.10	7.00	7.00	6.90	6.80	6.80	6.70	6.70	6.70	6.70	6.60	6.50	6.40	6.40	6.20

APPENDIX G

(Data File 5 - Longitudinal subsidence profile distance factors)

1	10.00	-.14	-.26	-.36	-.43	-.49	-.54	-.59	-.68	-.76	-.79	-.97
2	11.00	-.13	-.25	-.35	-.42	-.48	-.53	-.59	-.67	-.75	-.78	-.97
3	12.00	-.13	-.24	-.34	-.42	-.48	-.52	-.58	-.66	-.74	-.78	-.96
4	13.00	-.12	-.24	-.34	-.41	-.47	-.52	-.57	-.66	-.73	-.77	-.96
5	14.00	-.12	-.23	-.33	-.40	-.46	-.51	-.56	-.65	-.72	-.77	-.95
6	15.00	-.11	-.23	-.33	-.40	-.46	-.50	-.56	-.64	-.72	-.77	-.95
7	16.00	-.11	-.22	-.32	-.39	-.45	-.49	-.55	-.63	-.71	-.76	-.94
8	17.00	-.10	-.22	-.32	-.38	-.44	-.49	-.55	-.63	-.70	-.76	-.94
9	18.00	-.10	-.21	-.31	-.38	-.44	-.48	-.54	-.62	-.69	-.75	-.93
10	19.00	-.09	-.21	-.31	-.37	-.43	-.48	-.54	-.61	-.69	-.74	-.93
11	20.00	-.09	-.20	-.30	-.37	-.43	-.47	-.53	-.61	-.68	-.75	-.92
12	21.00	-.08	-.20	-.30	-.36	-.42	-.47	-.53	-.60	-.67	-.74	-.92
13	22.00	-.08	-.19	-.29	-.36	-.42	-.46	-.52	-.59	-.67	-.74	-.91
14	23.00	-.08	-.19	-.29	-.35	-.41	-.46	-.52	-.59	-.66	-.74	-.91
15	24.00	-.07	-.18	-.28	-.35	-.41	-.45	-.51	-.58	-.66	-.73	-.90
16	25.00	-.07	-.18	-.28	-.34	-.40	-.45	-.51	-.58	-.65	-.73	-.90
17	26.00	-.07	-.17	-.28	-.34	-.40	-.44	-.51	-.57	-.65	-.73	-.90
18	27.00	-.06	-.17	-.28	-.33	-.39	-.44	-.50	-.57	-.64	-.73	-.89
19	28.00	-.06	-.17	-.27	-.33	-.39	-.44	-.50	-.56	-.64	-.72	-.89
20	29.00	-.06	-.16	-.27	-.33	-.38	-.43	-.50	-.56	-.63	-.72	-.88
21	30.00	-.06	-.16	-.27	-.33	-.38	-.43	-.50	-.56	-.63	-.72	-.88
22	31.00	-.05	-.16	-.27	-.32	-.38	-.43	-.49	-.55	-.63	-.72	-.87
23	32.00	-.05	-.15	-.26	-.32	-.38	-.42	-.49	-.55	-.62	-.72	-.87
24	33.00	-.05	-.15	-.26	-.62	-.37	-.42	-.49	-.55	-.62	-.71	-.86
25	34.00	-.05	-.15	-.26	-.31	-.37	-.42	-.48	-.54	-.62	-.71	-.86
26	35.00	-.05	-.15	-.26	-.31	-.37	-.42	-.48	-.54	-.62	-.71	-.85
27	36.00	-.04	-.14	-.25	-.31	-.36	-.41	-.48	-.54	-.61	-.71	-.85
28	37.00	-.04	-.14	-.25	-.31	-.36	-.41	-.48	-.54	-.61	-.71	-.84
29	38.00	-.04	-.14	-.24	-.30	-.36	-.41	-.47	-.53	-.61	-.70	-.84
30	39.00	-.04	-.14	-.25	-.30	-.35	-.41	-.47	-.53	-.60	-.70	-.83
31	40.00	-.04	-.14	-.25	-.30	-.35	-.41	-.47	-.53	-.60	-.70	-.83
32	41.00	-.03	-.13	-.24	-.30	-.35	-.40	-.47	-.53	-.60	-.70	-.83
33	42.00	-.03	-.13	-.24	-.30	-.35	-.40	-.47	-.52	-.60	-.70	-.82
34	43.00	-.03	-.13	-.24	-.29	-.34	-.40	-.46	-.52	-.59	-.69	-.82
35	44.00	-.03	-.13	-.24	-.29	-.34	-.40	-.46	-.52	-.59	-.69	-.82
36	45.00	-.03	-.13	-.24	-.29	-.34	-.40	-.46	-.52	-.59	-.69	-.82
37	46.00	-.02	-.12	-.23	-.29	-.34	-.39	-.46	-.51	-.59	-.69	-.81
38	47.00	-.02	-.12	-.23	-.29	-.34	-.39	-.46	-.51	-.58	-.69	-.81
39	48.00	-.02	-.12	-.23	-.28	-.33	-.39	-.45	-.51	-.58	-.68	-.81
40	49.00	-.02	-.12	-.23	-.28	-.33	-.39	-.45	-.51	-.58	-.68	-.81
41	50.00	-.02	-.12	-.23	-.28	-.33	-.39	-.45	-.51	-.58	-.68	-.81
42	51.00	-.02	-.11	-.22	-.28	-.33	-.38	-.45	-.50	-.57	-.67	-.80
43	52.00	-.02	-.11	-.22	-.28	-.33	-.38	-.45	-.50	-.57	-.68	-.80
44	53.00	-.01	-.11	-.22	-.27	-.33	-.38	-.44	-.50	-.57	-.68	-.80
45	54.00	-.01	-.11	-.22	-.27	-.33	-.38	-.44	-.49	-.57	-.68	-.80
46	55.00	-.01	-.11	-.22	-.27	-.33	-.38	-.44	-.50	-.57	-.68	-.80
47	56.00	.01	-.10	-.21	-.27	-.32	-.37	-.44	-.49	-.57	-.67	-.79
48	57.00	.01	-.10	-.21	-.27	-.32	-.37	-.44	-.49	-.57	-.67	-.79
49	58.00	.00	-.10	-.21	-.26	-.32	-.37	-.43	-.49	-.56	-.69	-.79
50	59.00	.00	-.10	-.21	-.26	-.32	-.37	-.43	-.49	-.56	-.67	-.79

51	60.00	.00	-.10	-.21	-.26	-.32	-.37	-.43	-.49	-.56	-.67	-.79
52	61.00	.00	-.09	-.21	-.26	-.31	-.37	-.43	-.49	-.56	-.66	-.78
53	62.00	.00	-.09	-.21	-.26	-.31	-.37	-.43	-.49	-.56	-.66	-.78
54	63.00	.00	-.09	-.20	-.26	-.31	-.37	-.42	-.48	-.56	-.66	-.78
55	64.00	.00	-.09	-.20	-.26	-.31	-.37	-.42	-.48	-.56	-.66	-.78
56	65.00	.01	-.09	-.20	-.26	-.31	-.37	-.42	-.48	-.56	-.66	-.78
57	66.00	.01	-.09	-.20	-.25	-.30	-.36	-.42	-.48	-.55	-.65	-.77
58	67.00	.01	-.09	-.20	-.25	-.30	-.36	-.42	-.48	-.55	-.66	-.77
59	68.00	.01	-.08	-.20	-.25	-.30	-.36	-.42	-.47	-.55	-.66	-.77
60	69.00	.01	-.08	-.20	-.25	-.30	-.36	-.42	-.47	-.55	-.66	-.77
61	70.00	.02	-.08	-.20	-.25	-.30	-.36	-.42	-.47	-.55	-.66	-.77
62	71.00	.02	-.08	-.19	-.25	-.30	-.35	-.41	-.47	-.55	-.65	-.77
63	72.00	.02	-.08	-.19	-.25	-.30	-.35	-.41	-.47	-.55	-.65	-.77
64	73.00	.02	-.08	-.18	-.24	-.29	-.35	-.41	-.47	-.54	-.65	-.76
65	74.00	.02	-.08	-.19	-.24	-.29	-.35	-.41	-.47	-.54	-.65	-.76
66	75.00	.02	-.08	-.19	-.24	-.29	-.35	-.41	-.47	-.54	-.67	-.76
67	80.00	.03	-.07	-.18	-.24	-.29	-.35	-.40	-.46	-.54	-.64	-.76
68	85.00	.03	-.06	-.18	-.23	-.28	-.34	-.40	-.45	-.53	-.64	-.75
69	90.00	.04	-.06	-.17	-.23	-.28	-.33	-.39	-.45	-.53	-.63	-.75
70	95.00	.05	-.05	-.16	-.22	-.27	-.33	-.39	-.44	-.52	-.63	-.74
71	100.00	.05	-.05	-.16	-.22	-.27	-.32	-.38	-.44	-.52	-.62	-.74
72	110.00	.06	-.04	-.15	-.21	-.26	-.31	-.37	-.43	-.51	-.61	-.73
73	120.00	.07	-.03	-.14	-.20	-.25	-.31	-.36	-.42	-.50	-.60	-.72
74	130.00	.08	-.03	-.13	-.19	-.24	-.30	-.35	-.41	-.49	-.59	-.71
75	140.00	.09	-.02	-.13	-.19	-.24	-.29	-.34	-.40	-.45	-.58	-.70
76	150.00	.10	-.01	-.12	-.18	-.23	-.29	-.34	-.39	-.47	-.58	-.69
77	160.00	.10	-.01	-.11	-.17	-.22	-.28	-.33	-.39	-.47	-.57	-.68
78	170.00	.11	.00	-.10	-.17	-.22	-.27	-.33	-.38	-.46	-.56	-.68
79	180.00	.12	.01	-.10	-.16	-.21	-.27	-.32	-.38	-.46	-.56	-.67
80	190.00	.12	.01	-.09	-.16	-.21	-.26	-.32	-.37	-.45	-.55	-.67
81	200.00	.13	.02	-.09	-.15	-.21	-.26	-.31	-.37	-.45	-.55	-.66
82	210.00	.13	.02	-.08	-.15	-.20	-.25	-.31	-.37	-.44	-.54	-.66
83	220.00	.14	.02	-.08	-.14	-.20	-.14	-.30	-.36	-.44	-.54	-.65
84	230.00	.14	.03	-.07	-.14	-.19	-.25	-.30	-.36	-.44	-.54	-.65
85	240.00	.14	.03	-.07	-.14	-.19	-.24	-.30	-.36	-.43	-.53	-.65
86	250.00	.15	.03	-.07	-.14	-.19	-.24	-.29	-.35	-.43	-.53	-.65
87	260.00	.15	.04	-.06	-.13	-.19	-.24	-.29	-.35	-.42	-.53	-.65
88	270.00	.15	.04	-.06	-.13	-.18	-.24	-.29	-.35	-.43	-.53	-.64
89	280.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
90	290.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
91	300.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
92	310.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
93	320.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
94	330.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
95	340.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
96	350.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
97	360.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
98	380.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
99	400.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
100	420.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64

101	440.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
102	460.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
103	480.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
104	500.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
105	525.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
106	550.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
107	575.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
108	600.00	.15	.04	-.06	-.13	-.18	-.23	-.29	-.34	-.42	-.53	-.64
109	625.00	.15	.04	.06	.13	.18	.23	.29	.34	.42	.53	.64
110	650.00	.15	.04	.06	.13	.18	.23	.29	.34	.42	.53	.64
111	675.00	.15	.04	.06	.13	.18	.23	.29	.34	.42	.53	.64
112	700.00	.15	.04	.06	.13	.18	.23	.29	.34	.42	.53	.64
113	725.00	.15	.04	.06	.13	.18	.23	.29	.34	.42	.53	.64
114	750.00	.15	.04	.06	.13	.18	.23	.29	.34	.42	.53	.64

APPENDIX H

(Data File 6 - Longitudinal strain profile distance factors)

1	10.00	.12	.03	-.08	-.14	-.19	-.26	-.30	.00	-.42	-.47	-.49	-.55	-.66	-.74	-.84
2	11.00	.12	.02	-.07	-.14	-.18	-.25	-.30	.00	-.41	-.47	-.49	-.54	-.65	-.73	-.83
3	12.00	.13	.02	-.07	-.13	-.18	-.25	-.29	.00	-.41	-.46	-.48	-.54	-.65	-.73	-.83
4	13.00	.13	.01	-.06	-.13	-.17	-.24	-.29	.00	-.40	-.46	-.48	-.53	-.64	-.72	-.82
5	14.00	.14	.01	-.06	-.12	-.17	-.24	-.28	.00	-.40	-.45	-.47	-.53	-.64	-.72	-.81
6	15.00	.14	.00	-.06	-.12	-.16	-.23	-.28	.00	-.39	-.45	-.47	-.52	-.63	-.71	-.80
7	16.00	.14	.00	-.05	-.11	-.16	-.23	-.27	.00	-.39	-.44	-.46	-.52	-.63	-.71	-.80
8	17.00	.15	.01	-.05	-.11	-.15	-.22	-.27	.00	-.38	-.44	-.46	-.51	-.62	-.70	-.79
9	18.00	.15	.01	-.04	-.10	-.15	-.22	-.27	.00	-.38	-.43	-.46	-.51	-.61	-.70	-.78
10	19.00	.15	.02	-.04	-.10	-.14	-.21	-.26	.00	-.37	-.43	-.45	-.50	-.60	-.69	-.73
11	20.00	.16	.02	-.04	-.10	-.14	-.21	-.26	.00	-.37	-.43	-.45	-.50	-.59	-.68	-.77
12	21.00	.16	.02	-.03	-.09	-.13	-.21	-.26	.00	-.37	-.42	-.45	-.49	-.59	-.68	-.77
13	22.00	.16	.03	-.03	-.09	-.13	-.20	-.25	.00	-.36	-.42	-.44	-.49	-.58	-.68	-.76
14	23.00	.16	.03	-.03	-.08	-.12	-.20	-.25	.00	-.36	-.41	-.44	-.49	-.58	-.68	-.76
15	24.00	.17	.03	-.02	-.08	-.12	-.19	-.24	.00	-.36	-.41	-.43	-.48	-.58	-.67	-.75
16	25.00	.17	.04	-.02	-.08	-.11	-.19	-.24	.00	-.36	-.40	-.43	-.48	-.57	-.67	-.75
17	26.00	.17	.04	-.02	-.07	-.11	-.19	-.24	.00	-.35	-.40	-.43	-.48	-.57	-.67	-.75
18	27.00	.18	.04	-.02	-.07	-.11	-.19	-.24	.00	-.35	-.39	-.43	-.47	-.57	-.67	-.75
19	28.00	.18	.04	.01	-.07	-.10	-.18	-.23	.00	-.35	-.39	-.42	-.47	-.57	-.67	-.75
20	29.00	.18	.04	.01	-.06	-.10	-.18	-.23	.00	-.35	-.39	-.42	-.47	-.56	-.66	-.74
21	30.00	.18	.05	.01	-.06	-.10	-.18	-.23	.00	-.35	-.39	-.42	-.47	-.56	-.66	-.74
22	31.00	.19	.05	.01	-.06	-.10	-.18	-.23	.00	-.34	-.38	-.42	-.46	-.56	-.66	-.74
23	32.00	.19	.05	.01	-.06	-.10	-.18	-.23	.00	-.34	-.38	-.42	-.46	-.56	-.66	-.74
24	33.00	.19	.05	.00	-.05	-.09	-.17	-.22	.00	-.34	-.38	-.41	-.46	-.56	-.66	-.74
25	34.00	.19	.06	.00	-.05	-.09	-.17	-.22	.00	-.34	-.37	-.41	-.46	-.55	-.65	-.73
26	35.00	.19	.06	.00	-.05	-.09	-.17	-.22	.00	-.34	-.37	-.41	-.46	-.55	-.65	-.73
27	36.00	.20	.06	.00	-.05	-.09	-.17	-.22	.00	-.34	-.37	-.41	-.45	-.55	-.65	-.73
28	37.00	.20	.06	.00	-.05	-.09	-.17	-.22	.00	-.33	-.36	-.41	-.45	-.55	-.65	-.73
29	38.00	.20	.07	.01	-.04	-.08	-.16	-.21	.00	-.33	-.36	-.40	-.45	-.54	-.64	-.72
30	39.00	.20	.07	.01	-.04	-.08	-.16	-.21	.00	-.33	-.36	-.40	-.45	-.54	-.64	-.72
31	40.00	.20	.07	.01	-.04	-.08	-.16	-.21	.00	-.33	-.36	-.40	-.45	-.54	-.64	-.72
32	41.00	.21	.07	.01	-.04	-.08	-.16	-.21	.00	-.32	-.35	-.40	-.44	-.54	-.64	-.72
33	42.00	.21	.07	.01	-.04	-.08	-.16	-.21	.00	-.32	-.35	-.40	-.44	-.54	-.64	-.72
34	43.00	.21	.08	.02	-.03	-.07	-.15	-.20	.00	-.32	-.35	-.39	-.44	-.53	-.63	-.71
35	44.00	.23	.08	.02	-.03	-.07	-.15	-.20	.00	-.32	-.35	-.39	-.44	-.53	-.63	-.71
36	45.00	.22	.08	.02	-.03	-.07	-.15	-.20	.00	-.32	-.35	-.39	-.44	-.53	-.63	-.71
37	46.00	.22	.08	.02	-.03	-.07	-.15	-.20	.00	-.31	-.35	-.39	-.43	-.53	-.63	-.71
38	47.00	.22	.08	.02	-.03	-.07	-.15	-.20	.00	-.31	-.35	-.39	-.43	-.53	-.63	-.71
39	48.00	.22	.09	.03	-.03	-.07	-.14	-.19	.00	-.31	-.34	-.39	-.43	-.52	-.62	-.70
40	49.00	.23	.09	.03	-.03	-.07	-.14	-.19	.00	-.31	-.34	-.39	-.43	-.52	-.62	-.70
41	50.00	.23	.09	.03	-.03	-.07	-.14	-.19	.00	-.31	-.34	-.39	-.43	-.52	-.62	-.70
42	51.00	.23	.09	.03	-.02	-.06	-.14	-.19	.00	-.31	-.34	-.38	-.42	-.52	-.62	-.70
43	52.00	.23	.09	.03	-.02	-.06	-.14	-.19	.00	-.31	-.34	-.38	-.42	-.52	-.62	-.70
44	53.00	.23	.09	.04	-.02	-.06	-.13	-.18	.00	-.30	-.34	-.38	-.42	-.51	-.61	-.70
45	54.00	.23	.09	.04	-.02	-.06	-.13	-.18	.00	-.30	-.34	-.38	-.42	-.51	-.61	-.70
46	55.00	.23	.10	.04	-.02	-.06	-.13	-.18	.00	-.30	-.34	-.38	-.42	-.51	-.61	-.70
47	56.00	.23	.10	.04	-.01	-.06	-.13	-.18	.00	-.30	-.33	-.37	-.41	-.51	-.61	-.70
48	57.00	.24	.10	.04	-.01	-.06	-.13	-.18	.00	-.30	-.33	-.37	-.42	-.51	-.61	-.70
49	58.00	.24	.10	.04	-.01	-.05	-.13	-.18	.00	-.30	-.33	-.37	-.41	-.51	-.61	-.70
50	59.00	.24	.10	.04	-.01	-.05	-.13	-.18	.00	-.30	-.33	-.37	-.41	-.50	-.61	-.69

51	60.00	.24	.10	.05	-.01	-.05	-.13	-.18	.00	-.30	-.33	-.37	-.41	-.50	-.61	-.69
52	61.00	.24	.11	.05	-.01	-.05	-.12	-.17	.00	-.29	-.32	-.36	-.41	-.50	-.61	-.69
53	62.00	.24	.11	.05	-.00	-.05	-.12	-.17	.00	-.29	-.32	-.36	-.41	-.50	-.60	-.69
54	63.00	.25	.11	.05	-.00	-.05	-.12	-.17	.00	-.29	-.32	-.36	-.40	-.50	-.60	-.68
55	64.00	.25	.11	.05	-.00	-.05	-.12	-.17	.00	-.29	-.32	-.36	-.40	-.49	-.60	-.68
56	65.00	.25	.11	.05	-.00	-.05	-.12	-.17	.00	-.29	-.32	-.36	-.40	-.49	-.60	-.68
57	66.00	.25	.11	.05	-.00	-.04	-.12	-.17	.00	-.29	-.31	-.36	-.40	-.49	-.60	-.68
58	67.00	.25	.11	.05	.00	.04	.12	-.17	.00	-.29	-.31	-.35	-.40	-.49	-.60	-.68
59	68.00	.25	.11	.05	.00	-.04	-.11	-.16	.00	-.28	-.31	-.35	-.40	-.49	-.60	-.67
60	69.00	.25	.11	.06	.01	-.04	-.11	-.16	.00	-.28	-.31	-.35	-.40	-.49	-.60	-.67
61	70.00	.25	.12	.06	.01	-.04	-.11	-.16	.00	-.28	-.31	-.35	-.40	-.49	-.60	-.67
62	71.00	.26	.12	.06	.01	-.04	-.11	-.16	.00	-.28	-.31	-.35	-.39	-.49	-.60	-.69
63	72.00	.26	.12	.06	.01	-.04	-.11	-.16	.00	-.28	-.31	-.35	-.39	-.49	-.60	-.67
64	73.00	.26	.12	.06	.01	-.03	-.11	-.16	.00	-.27	-.31	-.34	-.39	-.49	-.60	-.67
65	74.00	.26	.12	.06	.01	-.03	-.11	-.16	.00	-.27	-.31	-.34	-.39	-.48	-.59	-.67
66	75.00	.26	.12	.06	.02	-.03	-.11	-.16	.00	-.27	-.31	-.34	-.39	-.48	-.59	-.67
67	80.00	.27	.13	.07	.02	.03	-.10	-.15	.00	-.27	-.30	-.34	-.38	-.47	-.58	-.66
68	85.00	.27	.14	.08	.03	.02	-.10	-.14	.00	-.26	-.30	-.33	-.38	-.47	-.58	-.65
69	90.00	.28	.14	.08	.04	.01	-.09	-.14	.00	-.26	-.29	-.33	-.37	-.46	-.57	-.64
70	95.00	.29	.15	.09	.04	.00	-.08	-.13	.00	-.25	-.29	-.32	-.36	-.46	-.57	-.64
71	100.00	.29	.15	.10	.05	.00	-.08	-.13	.00	-.25	-.28	-.32	-.36	-.45	-.56	-.63
72	110.00	.30	.17	.11	.06	.01	-.07	-.12	.00	-.24	-.27	-.31	-.35	-.44	-.55	-.62
73	120.00	.31	.18	.12	.07	.02	-.06	-.11	.00	-.23	-.26	-.30	-.34	-.43	-.54	-.61
74	130.00	.32	.19	.12	.08	.04	-.05	-.10	.00	-.22	-.25	-.29	-.33	-.42	-.53	-.61
75	140.00	.33	.19	.13	.09	.04	-.04	-.09	.00	-.21	-.25	-.28	-.32	-.42	-.53	-.60
76	150.00	.34	.20	.14	.10	.05	-.03	-.08	.00	-.21	-.24	-.28	-.32	-.41	-.52	-.59
77	160.00	.34	.21	.15	.10	.06	-.02	-.08	.00	-.20	-.23	-.27	-.31	-.40	-.51	-.58
78	170.00	.35	.21	.15	.11	.07	-.02	-.07	.00	-.19	-.23	-.26	-.30	-.40	-.50	-.58
79	180.00	.36	.22	.16	.12	.07	.01	-.07	.00	-.19	-.22	-.26	-.30	-.39	-.50	-.57
80	190.00	.36	.23	.17	.12	.08	.00	-.06	.00	-.18	-.21	-.25	-.29	-.39	-.50	-.56
81	200.00	.37	.23	.17	.13	.08	.01	-.06	.00	-.18	-.21	-.25	-.29	-.38	-.49	-.56
82	210.00	.37	.24	.18	.13	.08	.01	-.05	.00	-.18	-.21	-.24	-.28	-.38	-.49	-.56
83	220.00	.37	.24	.18	.14	.09	.02	-.05	.00	-.17	-.20	-.24	-.28	-.38	-.48	-.55
84	230.00	.38	.24	.18	.14	.09	.02	-.04	.00	-.17	-.20	-.24	-.28	-.37	-.48	-.55
85	240.00	.38	.25	.19	.14	.09	.02	-.04	.00	-.16	-.20	-.23	-.27	-.37	-.47	-.55
86	250.00	.38	.25	.19	.14	.10	.02	-.04	.00	-.16	-.20	-.23	-.27	-.37	-.47	-.54
87	260.00	.39	.25	.19	.15	.10	.03	-.03	.00	-.16	-.19	-.23	-.27	-.36	-.47	-.54
88	270.00	.39	.25	.19	.15	.10	.03	-.03	.00	-.15	-.19	-.22	-.26	-.36	-.47	-.54
89	280.00	.39	.25	.20	.15	.10	.03	-.03	.00	-.15	-.19	-.22	-.26	-.36	-.46	-.53
90	290.00	.39	.25	.20	.15	.10	.03	-.03	.00	-.15	-.19	-.22	-.26	-.36	-.46	-.53
91	300.00	.39	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
92	310.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
93	320.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
94	330.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
95	340.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
96	350.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
97	360.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
98	380.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
99	400.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
100	420.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53

101	440.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
102	460.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
103	480.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
104	500.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
105	525.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
106	550.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
107	575.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
108	600.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
109	625.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.40	-.53
110	650.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
111	675.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
112	700.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
113	725.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53
114	750.00	.40	.25	.20	.15	.10	.03	-.02	.00	-.15	-.18	-.21	-.25	-.36	-.46	-.53

APPENDIX I

(Data File 7 - Correction factors for the effect of seam gradient on tensile strain)

1	.00	.00	.00
2	1.50	.29	1.71
3	2.00	.35	1.65
4	2.50	.41	1.59
5	3.00	.46	1.54
6	3.50	.51	1.49
7	4.00	.56	1.44
8	4.50	.60	1.40
9	5.00	.64	1.36
10	5.50	.69	1.31
11	6.00	.73	1.27
12	6.50	.76	1.24
13	7.00	.80	1.20
14	7.50	.83	1.17
15	8.00	.85	1.15
16	9.00	.89	1.11
17	9.50	.91	1.09
18	10.00	.92	1.08